# Powerware® 9140 UPS
# 7.5–10 kVA
# User's Guide

EATON | Powerware

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# Class A EMC Statements

## FCC Part 15

**NOTE** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## ICES-003

This Class A Interference Causing Equipment meets all requirements of the Canadian Interference Causing Equipment Regulations ICES-003.

Cet appareil numérique de la classe A respecte toutes les exigences du Reglement sur le matériel brouilleur du Canada.

## EN 50091-2

Some configurations are classified under EN 50091-2 as "Class-A UPS for Unrestricted Sales Distribution." For these configurations, the following applies:

**WARNING** This is a Class A-UPS Product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take additional measures.

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## Requesting a Declaration of Conformity

Units that are labeled with a CE mark comply with the following harmonized standards and EU directives:

- Harmonized Standards: IEC 61000-3-12
- EU Directives: 73/23/EEC, Council Directive on equipment designed for use within certain voltage limits
  93/68/EEC, Amending Directive 73/23/EEC
  89/336/EEC, Council Directive relating to electromagnetic compatibility
  92/31/EEC, Amending Directive 89/336/EEC relating to EMC

## Special Symbols

The following are examples of symbols used on the UPS or accessories to alert you to important information:

**RISK OF ELECTRIC SHOCK** - Indicates that a risk of electric shock is present and the associated warning should be observed.

**CAUTION: REFER TO OPERATOR'S MANUAL** - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.

This symbol indicates that you should not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

# Table of Contents


**1 Introduction . . . . . 1**

**2 Safety Warnings . . . . . 3**

**3 Installation . . . . . 19**

Inspecting the Equipment . . . . . 19
Unpacking the Cabinet . . . . . 20
EBM Setup . . . . . 21
Checking the EBM Accessory Kit . . . . . 21
Rack Setup for the EBM . . . . . 22
Installing the EBM Batteries . . . . . 28
UPS Setup . . . . . 30
Checking the UPS Accessory Kit . . . . . 30
Rack Setup for the UPS . . . . . 31
Installing the UPS Internal Batteries . . . . . 39
EBM Installation . . . . . 40
UPS Installation . . . . . 42
Plug-Receptacle UPS Installation . . . . . 42
Hardwired UPS Installation . . . . . 46
REPO and ROO Installation . . . . . 54

**4 Operation . . . . . 57**

Control Panel Functions . . . . . 57
Changing the Language . . . . . 58
Display Functions . . . . . 59
User Settings . . . . . 60
Operating Modes . . . . . 62
Normal Mode . . . . . 62
Battery Mode . . . . . 62
Bypass Mode . . . . . 63
Standby Mode . . . . . 63
UPS Startup and Shutdown . . . . . 64
Normal Mode Startup . . . . . 64
Starting the UPS on Battery . . . . . 65
Internal Bypass Startup . . . . . 65
UPS Shutdown . . . . . 66

Configuring the UPS for EBMs . . . . . 67
Initiating the Battery Test . . . . . 67
Transferring the UPS Between Modes . . . . . 68

**5 Communication . . . . . 69**

USB Port . . . . . 70
Remote Emergency Power-off and Remote On/Off . . . . . 70
DB-9 Communication Ports . . . . . 72
X-Slot Cards . . . . . 73
Powerware LanSafe Power Management Software . . . . . 74

**6 UPS Maintenance . . . . . 75**

UPS and Battery Care . . . . . 75
Storing the UPS and Batteries . . . . . 75
When to Replace Batteries . . . . . 76
Replacing Batteries . . . . . 76
How to Replace EBM Batteries . . . . . 77
How to Replace UPS Internal Batteries . . . . . 79
Testing New Batteries . . . . . 81
Replacing the Electronics Module . . . . . 81
Recycling the Used Battery or UPS . . . . . 84

**7 Specifications . . . . . 85**

**8 Troubleshooting . . . . . 89**

Typical Alarms and Conditions . . . . . 89
Silencing the Alarm . . . . . 92
Service and Support . . . . . 92

**9 Warranty . . . . . 93**

Two-Year Limited Warranty (US and Canada) . . . . . 93
Ten-Year Pro-Rated Limited Warranty (US and Canada) . . . . . 95
Load Protection Guarantee (US and Canada) . . . . . 97

# Chapter 1 Introduction

The Powerware® 9140 uninterruptible power system (UPS) protects your sensitive electronic equipment from the most common power problems including power failures, power sags, power surges, brownouts, line noise, high voltage spikes, frequency variations, switching transients, and harmonic distortion.

Power outages can occur when you least expect it and power quality can be erratic. These power problems have the potential to corrupt critical data, destroy unsaved work sessions, and damage hardware — causing hours of lost productivity and expensive repairs.

With the Powerware 9140, you can safely eliminate the effects of power disturbances and guard the integrity of your equipment. Figure 1 shows the Powerware 9140 UPS with an optional Extended Battery Module (EBM).

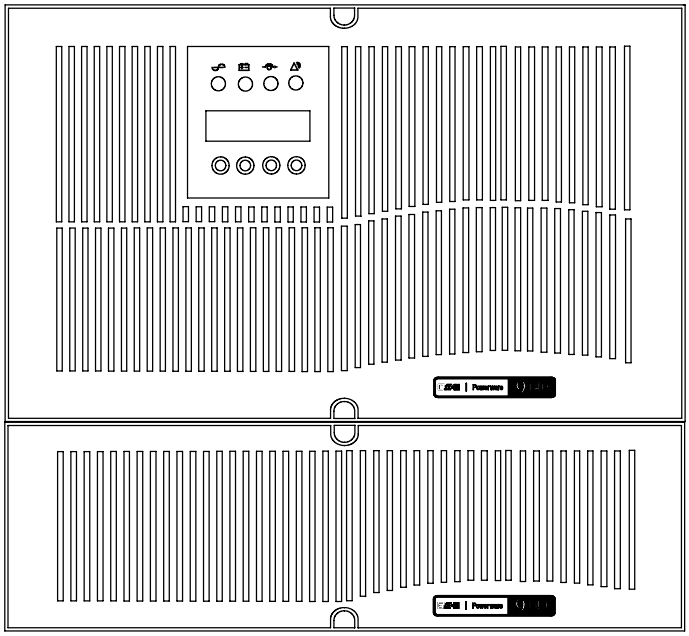


**Figure 1. The Powerware 9140 UPS with Optional EBM**

Providing outstanding performance and reliability, the Powerware 9140's unique benefits include the following:

- Online, double-conversion, high-frequency UPS design with pure sine wave output and power-factor correction. The UPS filters and regulates incoming AC power and provides consistent power to your equipment without draining the battery.
- For hardwired models, choice of operation mode between single-phase input mode and three-phase input mode.
- 6U rack height with the highest power density for a 10000 VA UPS.
- ABM® technology that uses advanced battery management to increase battery service life, optimize recharge time, and provide a warning before the end of useful battery life.
- Extended runtime with up to four EBMs.
- Start-on-battery capability for powering up the UPS even if utility power is not available.
- Easily replaceable electronics module and batteries that simplify maintenance by allowing you to replace them safely without powering down the critical load.
- Emergency shutdown control through the remote emergency power-off (REPO) port, or the option to configure the REPO port as a remote on/off (ROO) function.
- Two standard communication options with a USB port and two DB-9 serial ports (one DB-9 port is reserved for service use).
- Optional X-Slot® cards with enhanced communication capabilities for increased power protection and control.
- Firmware that is service upgradable through the X-Slot or DB-9 ports.
- Advanced power management with the Software Suite CD for graceful shutdowns and power monitoring.
- Backed by worldwide agency approvals.

# Chapter 2 Safety Warnings

## IMPORTANT SAFETY INSTRUCTIONS
## SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.

### DANGER

This UPS contains **LETHAL VOLTAGES**. All repairs and service should be performed by **AUTHORIZED SERVICE PERSONNEL ONLY**. There are **NO USER SERVICEABLE PARTS** inside the UPS.

### WARNING

- This UPS contains its own energy source (batteries). The output receptacles may carry live voltage even when the UPS is not connected to an AC supply.
- The output receptacles may have live voltages even in Standby or remote emergency power-off (REPO) mode. For example, with line-to-line input wiring (208V line-to-line, single-phase), the voltage at the output receptacles is 110–120V (measured from neutral-to-ground).
- Do not remove or unplug the input cord when the UPS is turned on. This removes the safety ground from the UPS and the equipment connected to the UPS.
- To reduce the risk of fire or electric shock, install this UPS in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 40°C (104°F). Do not operate near water or excessive humidity (95% maximum).
- For all UPS models, overcurrent protection for the input and output AC circuit(s) is to be provided by others. To reduce the risk of fire, connect only to a circuit provided with branch circuit overcurrent protection for 60 amperes (10 kVA models) or 50 amperes (7.5 kVA models) rating in accordance with the NEC, ANSI/NFPA 70.
- For all UPS models, suitably rated disconnect switches for the output AC circuit(s) are to be provided by others. To reduce the risk of fire, connect only to a circuit provided with branch circuit overcurrent protection for 50 amperes rating in accordance with the NEC, ANSI/NFPA 70.
- To comply with international standards and wiring regulations, the sum of the leakage current of the UPS and the total equipment connected to the output of this UPS must not have an earth leakage current greater than 3.5 milliamperes.

**CAUTION**

- Batteries can present a risk of electrical shock or burn from high short-circuit current. Observe proper precautions. Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.
- Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Never dispose of batteries in a fire. Batteries may explode when exposed to flame.

## Sikkerhedsanvisninger

### VIGTIGE SIKKERHEDSANVISNINGER
### GEM DISSE ANVISNINGER

Denne manual indeholder vigtige instruktioner, som skal følges under installation og vedligeholdelse af UPS'en og batterierne. Læs venligst alle instruktioner inden betjening af udstyret og gem denne manual mhp. fremtidige opslag.

**FARE**

Denne UPS indeholder LIVSFARLIG HØJSPÆNDING. Alle reparationer og vedligeholdelse bør kun udføres af en AUTORISERET SERVICETEKNIKER. Ingen af UPS'ens indvendige dele kan repareres af brugeren.

**ADVARSEL!**

- Denne UPS indeholder sin egen energikilde (batterier). Udgangsstikkene kan endog være strømførende, når UPS'en ikke er koblet til en vekselstrømsforsyning.
- Netledningen må ikke fjernes og stikket må ikke trækkes ud, mens UPS'en er tændt. Dette fjerner sikkerhedsjorden fra UPS'en og fra det udstyr, der er sat til.
- Installér denne UPS i et temperatur- og fugtighedskontrolleret indendørsmiljø, frit for ledende forureningsstoffer for at formindske risikoen for brand og elektrisk stød. Rumtemperaturen må ikke overstige 40°C. UPS'en bør ikke betjenes nær vand eller høj fugtighed (maksimalt 95%).
- For UPS systemer med hårdledningsudgange, skal overstrømsbeskyttelse for vekslestrømmens udgangskredsløb forsynes af andre.
- For UPS systemer med hårdledningsudgange, skal egnede, nominelle afbryderkontakter for vekslestrømmens udgangskredsløb forsynes af andre.
- I overensstemmelse med internationale normer og bestemmelser for el-installation må det udstyr, der er forbundet til udgangen af denne UPS, tilsammen ikke overskride en jordafdelingsspænding på mere end 3,5 milliampere.

**ADVARSEL**

- Batterierne kan give risiko for elektrisk stød eller brandsår forårsaget af høj kortslutningsstrøm. Overhold gældende forsigtighedsregler. Servicering skal udføres af kvalificeret servicepersonale med kendskab til batterier og gældende forsigtighedsregler. Hold uautoriseret personale væk fra batterierne.
- Korrekt bortskaffelse af batterier er påkrævet. Overhold gældende lokale regler for bortskaffelsesprocedurer.
- Skaf dig aldrig af med batterierne ved at brænde dem. Batterierne kan eksplodere ved åben ild.

## Belangrijke Veiligheidsinstructies

### BELANGRIJKE VEILIGHEIDSINSTRUCTIES BEWAAR DEZE INSTRUCTIES

Deze handleiding bevat belangrijke instructies die u dient te volgen tijdens de installatie en het onderhoud van de UPS en de accu's. Lees alle instructies voordat u de apparatuur in bedrijf neemt en bewaar deze handleiding als naslagwerk.

**GEVAAR**

Deze UPS bevat LEVENSGEVAARLIJKE ELEKTRISCHE SPANNING. Alle reparaties en onderhoud dienen UITSLUITEND DOOR ERKEND SERVICEPERSONEEL te worden uitgevoerd. Er bevinden zich GEEN ONDERDELEN in de UPS die DOOR DE GEBRUIKER kunnen worden GEREPAREERD.

**WAARSCHUWING**

- Deze UPS bevat een eigen energiebron (batterijen). De uitgangscontactdoos kan onder spanning staan, zelfs wanneer de UPS niet is aangesloten op de netspanning.
- Verwijder de ingangsnoer niet of haal de stekker van de ingangsnoer er niet uit terwijl de UPS aan staat. Hierdoor zou de UPS en uw aangesloten apparatuur geen aardebeveiliging meer hebben.
- Teneinde de kans op brand of elektrische schok te verminderen dient deze UPS in een gebouw met temperatuur- en vochtigheidregeling te worden geïnstalleerd, waar geen geleidende verontreinigingen aanwezig zijn. De omgevingstemperatuur mag 40°C niet overschrijden. Niet gebruiken in de buurt van water of bij zeer hoge vochtigheid (max. 95%).
- Voor UPS systemen met vast-bedrade uitgangen, moet de overstroombeveiliging voor wisselstroom uitvoercircuit(s) door anderen worden geleverd.

- Voor UPS systemen met vast-bedrade uitgangen, moeten de juiste hoofdschakelaars voor wisselstroom uitvoercircuit(s) door anderen worden geleverd.
- Om aan de internationale normen en bedradingsvoorschriften te voldoen mag de gehele apparatuur die op de uitgang van deze UPS is aangesloten, geen aardlekstroom van meer dan 3,5 milliampère hebben.

**OPGELET**

- Batterijen leveren gevaar op voor elektrische schokken en kunnen brandwonden veroorzaken door een grote kortsluitstroom. Neem de juiste voorzorgsmaatregelen in acht. Het onderhoud moet worden uitgevoerd door bevoegde onderhoudsmonteurs die verstand hebben van accu's en op de hoogte zijn van de vereiste voorzorgsmaatregelen. Houd onbevoegden uit de buurt van de accu's.
- De batterijen moeten op de juiste wijze worden opgeruimd. Raadpleeg hiervoor uw plaatselijke voorschriften.
- Nooit batterijen in het vuur gooien. De batterijen kunnen ontploffen.

## Tarkeita Turvaohjeita

# TÄRKEITÄ TURVAOHJEITA - SUOMI
# SÄILYTÄ NÄMÄ OHJEET

Tämä käyttöohje sisältää tärkeitä ohjeita, joita on noudatettava UPS-virtalähteen ja akkujen asennuksen ja huollon yhteydessä. Lue kaikki ohjeet ennen laitteiston käyttöä ja säilytä ohje myöhempää tarvetta varten.

### VAARA

Tämä UPS sisältää HENGENVAARALLISIA JÄNNITTEITÄ. Kaikki korjaukset ja huollot on jätettävä VAIN VALTUUTETUN HUOLTOHENKILÖN TOIMEKSI. UPS ei sisällä MITÄÄN KÄYTTÄJÄN HUOLLETTAVIA OSIA.

### VAROITUS

- Tässä UPS-virtalähteessä on oma energianlähde (akut). Lähtövastakkeissa voi olla jännite, vaikka UPS-virtalähdettä ei ole kytketty verkkovirtaan.
- Älä poista tai irrota sisääntulojohtoa, kun UPS on kytkettynä. Tämä poistaa turvamaadoituksen UPS-laitteesta ja siihen liitetystä laitteistosta.
- Vähentääksesi tulipalon ja sähköiskun vaaraa asenna tämä UPS sisätiloihin, joissa lämpötila ja kosteus on säädettävissä ja joissa ei ole virtaa johtavia epäpuhtauksia. Ympäristön lämpötila ei saa ylittää 40 °C. Älä käytä lähellä vettä ja vältä kosteita tiloja (95 % maksimi).
- UPS-järjestelmissä kiintealla asennuksella: kuormana olevien laitteiden ylivirtasuojaus ja erotuskytkimet tulee toteuttaa kuormapiireissa.
- Kansainväliset normit ja johdotusmääräykset vaativat, että kaikkien tämän UPS-laitteen ulostulokytkentöjen yhteinen maavuotovirta ei ylitä 3,5 milliampeeria (mA).

### VARO

- Akut voivat aiheuttaa sähköiskun tai palovammojen vaaran johtuen suuresta oikosulkuvirrasta. Noudata kaikkia asianmukaisia varotoimia. Laitteen saa huoltaa vain ammattitaitoinen huoltohenkilökunta, joka tuntee akut ja niihin liittyvät varotoimet. Älä päästä valtuuttamatonta henkilöstöä lähelle akkuja.
- Akusto täytyy hävittää säädösten mukaisella tavalla. Noudata paikallisia määräyksiä.
- Älä koskaan heitä akkuja tuleen. Ne voivat räjähtää.

## Consignes de sécurité

# CONSIGNES DE SÉCURITÉ IMPORTANTES
# CONSERVER CES INSTRUCTIONS

Ce manuel comporte des instructions importantes que vous êtes invité à suivre lors de toute procédure d'installation et de maintenance des batteries et de l'onduleur. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.

### DANGER!

Cet onduleur contient des TENSIONS MORTELLES. Toute opération d'entretien et de réparation doit être EXCLUSIVEMENT CONFIÉE A UN PERSONNEL QUALIFIÉ AGRÉÉ. AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR ne se trouve dans l'onduleur.

### AVERTISSEMENT!

- Cette onduleur possède sa propre source d'alimentation (batteries). Il est possible que les prises de sortie soient sous tension même lorsque l'onduleur n'est pas connectée à une alimentation CA.
- Ne pas retirer le cordon d'alimentation lorsque l'onduleur est sous tension sous peine de supprimer la mise à la terre de l'onduleur et du matériel connecté.
- Pour réduire les risques d'incendie et de décharge électrique, installer l'onduleur uniquement à l'intérieur, dans un lieu dépourvu de matériaux conducteurs, où la température et l'humidité ambiantes sont contrôlées. La température ambiante ne doit pas dépasser 40 °C. Ne pas utiliser à proximité d'eau ou dans une atmosphère excessivement humide (95 % maximum).
- Pour les models l'onduleur ayant des sorties câblées, la protection contre une surintensité pour le(s) circuit(s) de sortie de courant alternatif doit être fournie par un autre fournisseur.
- Pour les models l'onduleur ayant des sorties câblées, les interrupteurs de déconnexion convenables pour le(s) circuit(s) de sortie de courant alternatif doivent être fournie par un autre fournisseur.
- Afin d'être conforme aux normes et règlements internationaux de câblage, le courant de fuite à la terre de la totalité du matériel branché sur la sortie de l'onduleur ne doit pas dépasser 3,5 mA.

**ATTENTION!**

- Les batteries peuvent présenter un risque de choc électrique ou de brûlure provenant d'un courant de court-circuit haute intensité. Observez les précautions appropriées. L'entretien doit être réalisé par du personnel qualifié connaissant bien les batteries et les précautions nécessaires. N'autorisez aucun personnel non qualifié à manipuler les batteries.
- Une mise au rebut réglementaire des batteries est obligatoire. Consulter les règlements en vigueur dans votre localité.
- Ne jamais jeter les batteries au feu. L'exposition aux flammes risque de les faire exploser.

## Sicherheitswarnungen

### WICHTIGE SICHERHEITSANWEISUNGEN AUFBEWAREN

Dieses Handbuch enthält wichtige Anweisungen, die Sie während der Installation und Wartung des USV (Unterbrechungsfreies Stromversorgungssystem) und der Batterien befolgen müssen. Bitte lesen Sie alle Anweisungen des Handbuches bevor sie mit dem Gerät arbeiten. Bewaren Sie das Handbuch zum Nachlesen auf.

**WARNUNG**

Die USV führt lebensgefährliche Spannungen. Alle Reparatur- und Wartungsarbeiten sollten nur von Kundendienstfachleuten durchgeführt werden. Die USV enthält keine vom Benutzer zu wartenden Komponenten.

**ACHTUNG**

- Dieses USV (Unterbrechungsfreies Stromversorgungssystem) enthält eine eigene Energiequelle (Batterien). Die Ausgangssteckdosen können Spannung führen, auch wenn das USV nicht an eine Wechselstromquelle angeschlossen ist.
- Das Eingangskabel nicht entfernen oder abziehen, während die USV eingeschaltet ist, weil hierdurch die Sicherheitserdung von der USV und den daran angeschlossenen Geräten entfernt wird.
- Um die Brand- oder Elektroschockgefahr zu verringern, diese USV nur in Gebäuden mit kontrollierter Temperatur und Luftfeuchtigkeit installieren, in denen keine leitenden Schmutzstoffen vorhanden sind. Die Umgebungstemperatur darf 40°C nicht übersteigen. Die USV nicht in der Nähe von Wasser oder in extrem hoher Luftfeuchtigkeit (max. 95 %) betreiben.
- Für USV-Systeme mit festverdrahteten Eingängen muß der Überstromschutz für die Ausgangswechselstromkreise anderweitig bereitgestellt werden.

- Für USV-Systeme mit festverdrahteten Ausgängen müssen Trennschalter für die Ausgangswechselstromkreise mit passendem Nennwert anderweitig bereitgestellt werden.
- Um internationale Normen und Verdrahtungsvorschriften zu erfüllen, dürfen die an den Ausgang dieser USV angeschlossenen Geräte zusammen einen Erdableitstrom von insgesamt 3,5 Milliampere nicht überschreiten.

**VORSICHT!**

- Batterien können das Risiko eines elektrischen Schlags bergen oder durch hohen Kurzschlussstrom in Brand geraten. Die richtigen Vorsichtsmaßnahmen beachten. Die Wartung muss von qualifiziertem Wartungspersonal durchgeführt werden, das im Umgang mit Batterien geübt ist und über gute Kenntnisse der erforderlichen Vorsichtsmaßnahmen verfügt. Nicht autorisiertes Personal von Batterien fern halten.
- Die Batterien müssen ordnungsgemäß entsorgt werden. Hierbei sind die örtlichen Bestimmungen zu beachten.
- Batterien niemals verbrennen, da sie explodieren können.

## Avvisi di sicurezza

# IMPORTANTI ISTRUZIONI DI SICUREZZA
# CONSERVARE QUESTE ISTRUZIONI

Il presente manuale contiene importanti istruzioni da seguire durante l'installazione e la manutenzione dell'UPS e delle batterie. Leggere integralmente le istruzioni prima di utilizzare l'apparecchiatura e conservare il presente manuale per futuro riferimento.

### PERICOLO

La TENSIONE contenuta in questo gruppo statico di continuità è LETALE. Tutte le operazioni di riparazione e di manutenzione devono essere effettuate ESCLUSIVAMENTE DA PERSONALE TECNICO AUTORIZZATO. All'interno del gruppo statico di continuità NON vi sono PARTI RIPARABILI DALL'UTENTE.

### AVVERTENZA

- L'UPS contiene la propria fonte di energia (batterie). Le prese d'uscita possono essere sotto tensione anche quando l'UPS non è collegato all'alimentazione elettrica CA.
- Non rimuovere nè scollegare il cavo di ingresso quando il gruppo statico di continuità è acceso poichè in tal modo si disattiverebbe il collegamento a terra di sicurezza del gruppo statico di continuità e dell'apparecchiatura ad esso collegata.
- Per ridurre il rischio di incendio o di scossa elettrica, installare il gruppo statico di continuità in un ambiente interno a temperatura ed umidità controllata, privo di agenti contaminanti conduttivi. La temperatura ambiente non deve superare i 40°C. Non utilizzare l'unità in prossimità di acqua o in presenza di umidità eccessiva (95% max).
- Nei sistemi UPS provvisti di uscite cablate, i dispositivi di protezione da sovracorrente per il/i circuito/i a corrente alternata in uscita devono essere forniti da terzi.
- Nei sistemi UPS provvisti di uscite cablate, i sezionatori di corrente nominale adeguata per il/i circuito/i a corrente alternata in uscita devono essere forniti da terzi.
- Per conformità con gli standard internazionali e con le norme in merito al cablaggio, tutta l'apparecchiatura collegata con l'uscita del gruppo statico di continuità non deve avere una corrente di dispersione di terra superiore a 3,5 milliampere.

## ATTENZIONE

- Le batterie possono comportare un rischio di scossa elettrica o di ustione in seguito a un'elevata corrente di corto circuito. Osservare le dovute precauzioni. L'assistenza deve essere eseguita da personale qualificato esperto di batterie e delle necessarie precauzioni. Tenere il personale non autorizzato lontano dalle batterie.
- Le batterie devono essere smaltite in modo corretto. Per i requisiti di smaltimento fare riferimento alle disposizioni locali.
- Non gettare mai le batterie nel fuoco poichè potrebbero esplodere se esposte alle fiamme.

## Viktig Sikkerhetsinformasion

# VIKTIGE SIKKERHETSINSTRUKSJONER
# GJEM DISSE INSTRUKSJONENE

Denne håndboken inneholder viktige instruksjoner som du bør overholde ved montering og vedlikehold av UPS-enheten og batteriene. Les alle instruksjoner før utstyret tas i bruk, og gjem håndboken til fremtidig referanse.

### FARLIG

Denne UPS'en inneholder LIVSFARLIGE SPENNINGER. All reparasjon og service må kun utføres av AUTORISERT SERVICEPERSONALE. BRUKERE KAN IKKE UTFØRE SERVICE PÅ NOEN AV DELENE i UPS'en.

### FARLIG

- UPS-enheten inneholder sin egen energikilde (batterier). Utgangsstikkene kan være strømførende selv når UPS-enheten ikke er koblet til et strømuttak.
- Strømforsyningskabelen må ikke fjernes eller trekkes ut når UPS'en er på, slik at ikke sikkerhetsjordingen fjernes fra UPS'en og det utstyret som er forbundet med den.
- For å redusere fare for brann eller elektriske støt, bør denne UPS'en installeres i et innendørs miljø med kontrollert temperatur og luftfuktighet som er fritt for ledende, forurensende stoffer. Romtemperaturen må ikke overskride 40°C. Den må ikke brukes i nærheten av vann eller ved meget høy luftfuktighet (95% maks.).
- For UPS systemer med fastkoplete uttak, må overstrømvern for vekselstrømuttak(ene) stilles til rådighet av andre.
- For UPS systemer med fastkoplete uttak, må passende utkoplingsbrytere for vekselstrømuttak(ene) stilles til rådighet av andre.
- Alt utstyr som er forbundet med utgangen av denne UPS'en må ikke ha en sterkere total lekkasjestrøm enn 3,5 milliampere for å være i overensstemmelse med internasjonale standarder og forkablingsbestemmelser.

### FORSIKTIG

- Batterier kan utgjøre en fare for elektrisk støt eller brannsår pga. høy kortsluttingsstrøm. Treff passende forholdsregler. Service bør utføres av kvalifisert servicepersonale med kjennskap til batterier og nødvendige forholdsregler. Hold uautorisert personale borte fra batteriene.
- Batterier må fjernes på korrekt måte. Se lokale forskrifter vedrørende krav om fjerning av batterier.
- Kast aldri batterier i flammer, da de kan eksplodere, hvis de utsettes for åpen ild.

## Regulamentos de Segurança

# INSTRUÇÕES DE SEGURANÇA IMPORTANTES
# GUARDE ESTAS INSTRUÇÕES

Este manual contém instruções importantes que devem ser seguidas durante a instalação e manutenção do no-break e das baterias. Leia todas as instruções antes de operar o equipamento e guarde este manual para consultá-lo futuramente.

### CUIDADO

A UPS contém VOLTAGEM MORTAL. Todos os reparos e assistência técnica devem ser executados SOMENTE POR PESSOAL DA ASSISTÊNCIA TÉCNICA AUTORIZADO. Não há nenhuma PEÇA QUE POSSA SER REPARADA PELO USUÁRIO dentro da UPS.

### ADVERTÊNCIA

- Este no-break possui sua própria fonte de energia (baterias). As tomadas de saída podem estar energizadas mesmo que o no-break não esteja conectado a uma fonte de energia elétrica.
- Não remova ou desconecte o cabo de entrada quando a UPS estiver ligada. Isto removerá o aterramento de segurança da UPS e do equipamento conectado.
- Para reduzir o risco de incêndios ou choques elétricos, instale a UPS em ambiente interno com temperatura e umidade controladas e livres de contaminadores condutíveis. A temperatura ambiente não deve exceder 40°C. Não opere próximo a água ou em umidade excessiva (máx: 95%).
- Para sistemas UPS com saídas conectadas, a proteção de sobrecarga para circuitos de saída de corrente alternada deve ser fornecida por outros.
- Para sistemas UPS com saídas conectadas, interruptores de desconexão devidamente qualificados para circuitos de saída de corrente alternada devem ser fornecidos por outros.
- Para estar de acordo com os padrões internacionais e os regulamentos de fiação, o equipamento total conectado à saída desta UPS não deve ter uma corrente de fuga à terra maior que 3,5 miliampères.

**PERIGO**

- As baterias podem oferecer risco de choque elétrico ou queimadura, ocasionados por alta tensão com possibilidade de curto-circuito. Tome as precauções adequadas. A manutenção deve ser realizada por pessoal qualificado, com conhecimento sobre baterias e ciente das precauções exigidas. Mantenha o pessoal não autorizado afastado das baterias.
- Siga as instruções apropriadas ao desfazer-se das baterias. Consulte os códigos do local para maiores informações sobre os regulamentos de descarte de produtos.
- Nunca jogue as baterias no fogo, porque há risco de explosão.

## Предупреждения по мерам безопасности

### ВАЖНЫЕ УКАЗАНИЯ ПО МЕРАМ БЕЗОПАСНОСТИ СОХРАНИТЕ ЭТИ УКАЗАНИЯ

В данном руководстве содержатся важные инструкции по установке и обслуживанию источника бесперебойного питания (ИБП) и батарей. Перед работой с оборудованием прочтите все инструкции. Сохраните данное руководство для дальнейшего использования.

**ОПАСНО**

В данном ИБП имеются СМЕРТЕЛЬНО ОПАСНЫЕ НАПРЯЖЕНИЯ. Все работы по ремонту и обслуживанию должны выполняться ТОЛЬКО УПОЛНОМОЧЕННЫМ ОБСЛУЖИВАЮЩИМ ПЕРСОНАЛОМ. Внутри ИБП нет узлов, ОБСЛУЖИВАЕМЫХ ПОЛЬЗОВАТЕЛЕМ.

## ПРЕДУПРЕЖДЕНИЕ

- В данном ИБП установлены собственные источники энергии (батареи). На выходных розетках может быть напряжение, даже если ИБП не подключен к сети переменного тока.
- Не отсоединяйте сетевой шнур и не извлекайте его вилку из розетки при включенном ИБП. При этом защитное заземление отключается от ИБП и от оборудования, подключенного к ИПБ.
- Для снижения опасности пожара или поражения электрическим током устанавливайте ИБП в закрытом помещении с контролируемыми температурой и влажностью, в котором отсутствуют проводящие загрязняющие вещества. Температура окружающего воздуха не должна превышать 40°C. Не эксплуатируйте устройство около воды или в местах с повышенной влажностью (макс. 95%).
- Для моделей ИБП с постоянно запаянными выходными контактами устройство защиты от перегрузки выходного контура (контуров) переменного тока приобретается отдельно.
- Для моделей ИБП с постоянно запаянными выходными контактами соответствующие размыкающие переключатели выходного контура (контуров) переменного тока приобретаются отдельно.
- Для обеспечения соблюдения требований международных стандартов и требований к разводке электрических цепей, суммарная величина тока утечки на землю всего оборудования, подключенного к выходу ИБП, не должна превышать 3,5 миллиампера.

## ОСТОРОЖНО

- Высокое напряжение, вызванное коротким замыканием в батарее, может привести к поражению электрическим током или ожогу. Соблюдайте меры предосторожности. Техническое обслуживание должно осуществляться квалифицированным персоналом по работе с источниками питания, знакомым с мерами предосторожности. Не допускайте к работе с батареями посторонних.
- Необходимо соблюдать правила утилизации аккумуляторов. Обратитесь к местным нормативным актам за информацией о требованиях к утилизации.
- Никогда не бросайте аккумуляторы в огонь. Аккумуляторы могут взорваться под воздействием огня.

## Advertencias de Seguridad

# INSTRUCCIONES DE SEGURIDAD IMPORTANTES
# GUARDE ESTAS INSTRUCCIONES

Este manual contiene instrucciones importantes que debe seguir durante la instalación y el mantenimiento del SIE y de las baterías. Por favor, lea todas las instrucciones antes de poner en funcionamiento el equipo y guarde este manual para referencia en el futuro.

### PELIGRO

Este SIE contiene VOLTAJES MORTALES. Todas las reparaciones y el servicio técnico deben ser efectuados SOLAMENTE POR PERSONAL DE SERVICIO TÉCNICO AUTORIZADO. No hay NINGUNA PARTE QUE EL USUARIO PUEDA REPARAR dentro del SIE.

### ADVERTENCIA

- Este SIE contiene su propia fuente de energía (baterías). Los receptáculos de salida pueden transportar voltaje activo aun cuando el SIE no esté conectado con una fuente de CA.
- No retire o desenchufe el cable de entrada mientras el SIE se encuentre encendido. Esto suprime la descarga a tierra de seguridad del SIE y de los equipos conectados al SIE.
- Para reducir el riesgo de incendio o de choque eléctrico, instale este SIE en un lugar cubierto, con temperatura y humedad controladas, libre de contaminantes conductores. La temperatura ambiente no debe exceder los 40°C. No trabaje cerca del agua o con humedad excesiva (95% máximo).
- Para los sistemas SIE con salidas cableadas permanentemente, la protección contra exceso de corriente para el/los circuito(s) de CA de salida será suministrada por terceros.
- Para los sistemas SIE con salidas cableadas permanentemente, los interruptores de desconexión debidamente clasificados para el/los circuito(s) de CA de salida serán suministrados por terceros.
- Para cumplir con los estándares internacionales y las normas de instalación, la totalidad de los equipos conectados a la salida de este SIE no debe tener una intensidad de pérdida a tierra superior a los 3,5 miliamperios.

### PRECAUCIÓN

- Las baterías pueden constituir un riesgo de descarga eléctrica o quemaduras por corriente alta de corto circuito. Adopte las precauciones debidas. Personal calificado de servicio que conozca de baterías y esté al tanto de las precauciones requeridas debe darle servicio al equipo. Mantenga al personal no autorizado alejado de las baterías.
- Es necesario desechar las baterías de un modo adecuado. Consulte las normas locales para conocer los requisitos pertinentes.
- Nunca deseche las baterías en el fuego. Las baterías pueden explotar si se las expone a la llama.

## Säkerhetsföreskrifter

# VIKTIGA SÄKERHETSFÖRESKRIFTER
# SPARA DESSA FÖRESKRIFTER

Den här anvisningen innehåller viktiga instruktioner som du ska följa under installation och underhåll av UPS-enheten och batterierna. Läs alla instruktioner innan du använder utrustningen och spara den här anvisningen för framtida referens.

### FARA

Denna UPS-enhet innehåller LIVSFARLIG SPÄNNING. ENDAST AUKTORISERAD SERVICEPERSONAL får utföra reparationer eller service. Det finns inga delar som ANVÄNDAREN KAN UTFÖRA SERVICE PÅ inuti UPS-enheten.

### VARNING

- Den här UPS-enheten innehåller sin egen energikälla (batterier). Uttagen kan vara spänningsförande även då UPS-enheten inte är ansluten till spänningsnätet.
- Ta aldrig bort nätsladden när UPS-enheten är påslagen. Detta tar bort skyddsjordningen från både UPS-enheten och den anslutna utrustningen.
- Minska risken för brand eller elektriska stötar genom att installera denna UPS-enhet inomhus, där temperatur och luftfuktighet är kontrollerade och där inga ledande föroreningar förekommer. Omgivande temperatur får ej överstiga 40°C. Använd inte utrustningen nära vatten eller vid hög luftfuktighet (max 95 %).
- Överströmsskydd för de utgående växelströmskretsarna ska tillhandahållas av andra för UPS-system med fasta utgångar.
- Bortkopplingsswitchar med passande dimensionering för de utgående växelströmskretsarna ska tillhandahållas av andra för UPS-system med fasta utgångar.
- För att överensstämma med internationell standard och installationsföreskrifter får inte den totala utrustning som anslutits till uttagen på denna UPS-enhet ha läcksström som överstiger 3,5 milliampere.

### VIKTIGT

- Batterierna kan innebära en risk för elektrisk stöt eller brännskada från kortsluten starkström. lakttag lämpliga försiktighetsåtgärder. Service ska utföras av utbildad servicepersonal med kunskap om batterierna och nödvändiga försiktighetsåtgärder. Håll ej behörig personal borta från batterierna.
- Batterierna måste avyttras enligt anvisningarna i lokal lagstiftning.
- Använda batterier får aldrig brännas upp. De kan explodera.

# Chapter 3 Installation

This section explains:

- Equipment inspection
- Unpacking the cabinet
- Extended Battery Module (EBM) setup and installation, including EBM batteries
- UPS setup and installation, including UPS internal batteries
- Remote emergency power-off (REPO) or remote on/off (ROO) installation

## Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage: 1) File with the carrier within 15 days of receipt of the equipment; 2) Send a copy of the damage claim within 15 days to your service representative.

***NOTE*** *Check the battery recharge date on the shipping carton label. If the date has expired and the batteries were never recharged, do not use the UPS. Contact your service representative.*

## Unpacking the Cabinet

**CAUTION**

- Unpacking the cabinet in a low-temperature environment may cause condensation to occur in and on the cabinet. Do not install the cabinet until the inside and outside of the cabinet are absolutely dry (hazard of electric shock).
- The UPS is heavy (see page 85). A minimum of two people are required to remove the UPS from its carton.

To unpack the cabinet and accessories:

1. Cut the pallet straps and remove the large cardboard outer sleeve. Have two people lift the sleeve for ease of removal.
2. The cabinet, batteries, and accessory kit are packaged in individual cartons. Do not install the batteries until after the cabinet is installed in the rack.

   Use care when moving and opening the cartons. Leave the components packaged until ready to install.
3. Discard or recycle the packaging in a responsible manner, or store it for future use.

Follow these guidelines when locating the cabinet after unpacking:

- Place the cabinet in a protected area that has adequate airflow and is free of humidity, flammable gas, and corrosion.
- Avoid placing the cabinet on its side. Make sure the air vents on the front and rear of the cabinet are not blocked.
- The recommended configuration is to install the optional EBM(s) in the lower part of the rack, with the UPS directly above the EBM(s).

If installing optional EBM(s), continue to the following section, "EBM Setup." Otherwise, continue to "UPS Setup" on page 30.

## EBM Setup

The Powerware 9140 EBM comes with all hardware required for installation in a standard EIA or JIS seismic rack-mount configuration with square or round mounting holes. The rail assemblies adjust to mount in 19-inch panel racks from 24 to 30 inches deep.

### Checking the EBM Accessory Kit

If you purchased an optional EBM, verify that the following items are included with the EBM:

- Mounting brackets and fasteners (if not already installed):
  - (2) front mounting brackets
  - (2) rear mounting brackets
  - (12) M4 flat-head screws, plus (2) extra
- Rails and fasteners:
  - (2) sliding rail assemblies (left and right)
  - (4) adapter plates (for 7.1 mm round hole)
  - (4) adapter plates (for 9.5 mm square hole)
  - (16) M5 machine screws, plus (2) extra
  - (2) M6 machine screws, plus (2) extra
  - (2) M6 clip nuts for racks with round holes, plus (2) extra
  - (2) M6 cage nuts for racks with square holes, plus (2) extra
  - (8) M4 machine screws with (8) M4 locknuts, plus (2) extra of each
- EBM user's guide
- Optional seismic mounting brackets and fasteners:
  - (2) EBM seismic mounting brackets
  - (4) wing bolts, plus (1) extra
  - (4) M6 machine screws

***NOTE*** *Discard the EBM user's guide if you are installing the EBM with a new UPS at the same time. Use the UPS user's guide instead to install both the UPS and the EBM.*

## Rack Setup for the EBM

***NOTE*** *Mounting rails are required for each individual cabinet.*

***NOTE*** *The recommended configuration is to install the EBM(s) in the lower part of the rack, with the UPS directly above the EBM(s).*

To install the optional EBM rail kit:

1. Select the proper holes in the rack for positioning the EBM in the rack (see Figure 2).

***NOTE*** *The EBM takes up position 1 through position 9.*

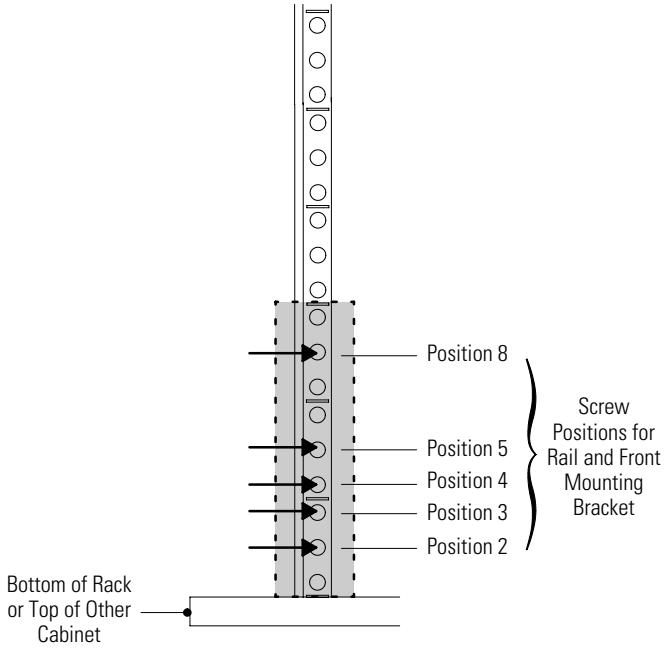


**Figure 2. Front Rail Screw Positions for the EBM**

2. Using two M5 machine screws and an adapter plate, attach the rail to the front of the rack (see Figure 2 and Figure 3).

   Do not tighten the screws.

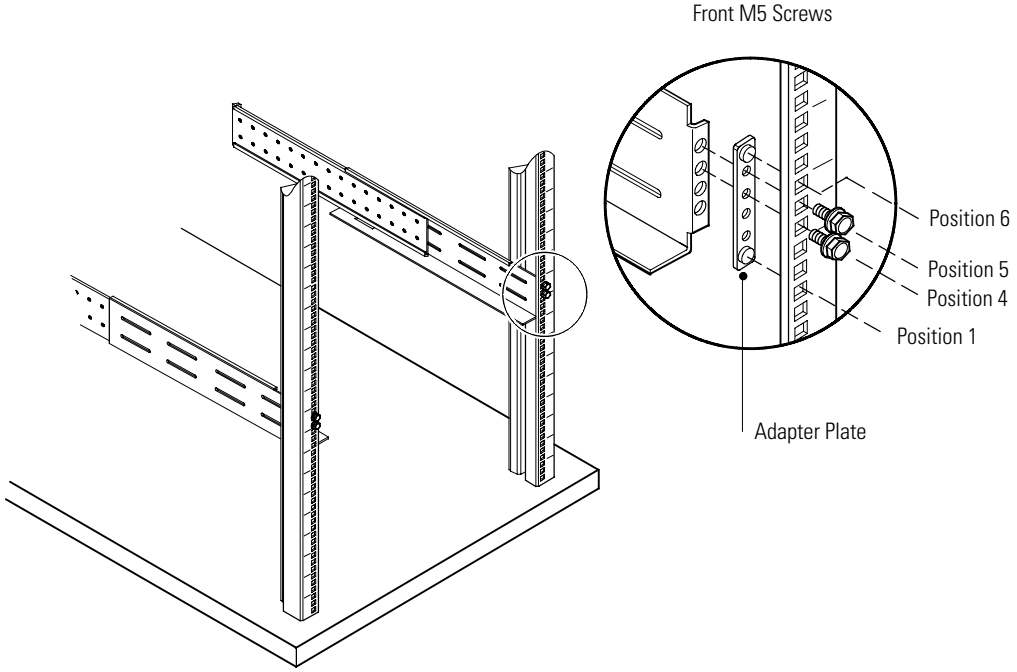


**Figure 3. Securing the Front Rail**

3. Adjust the rail size on the rail assembly for the depth of your rack (see Figure 4).

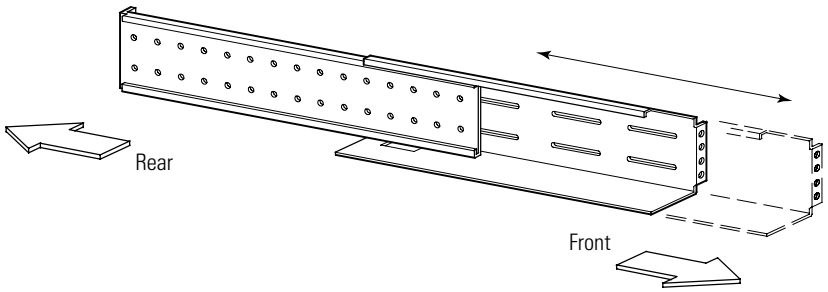


**Figure 4. Adjusting the Rail Depth (Right Rail Assembly Shown)**

**4.** Secure the rail to the rear of the rack with four M5 machine screws and an adapter plate (see Figure 5).

Tighten all screws at the front and rear of the rail.

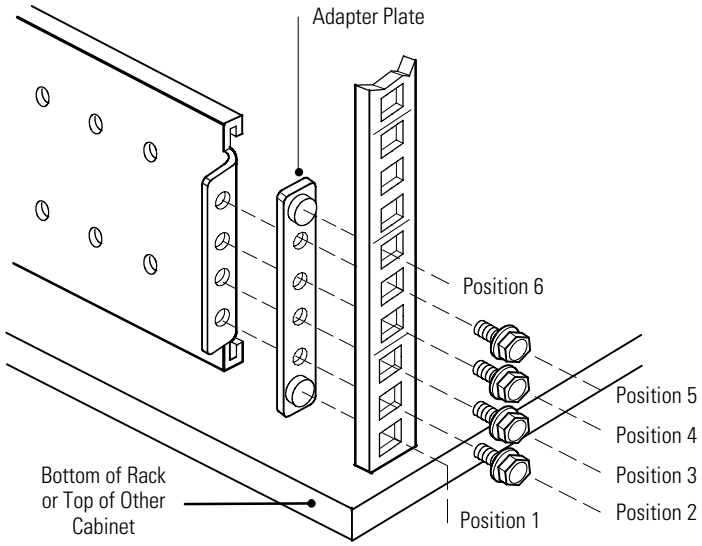


**Figure 5. Securing the Rear Rail (Right Rail Assembly Shown)**

**5.** Repeat Steps 2 through 4 for the other rail.

**6.** To tighten the rail adjustment, assemble four M4 machine screws and four M4 locknuts to the middle of the rail assembly. Tighten using a 7 mm (9/32") nut driver. See Figure 6.

Repeat for the other rail.

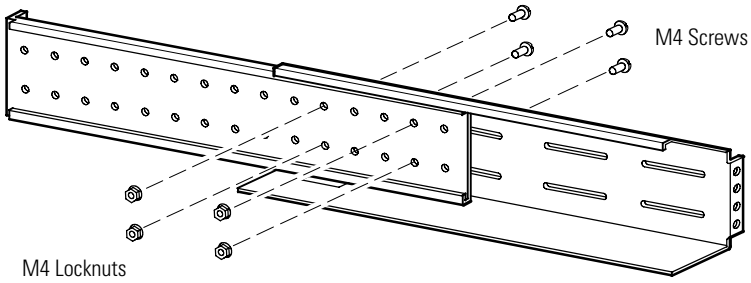


**Figure 6. Tightening the Rail Adjustment (Right Rail Assembly Shown)**

7. Place the EBM on a flat, stable surface with the front of the EBM facing toward you.

8. If the front and rear mounting brackets are already installed, skip to Step 11. If the brackets are not already installed, continue to Step 9.

9. Align the two front mounting brackets with the screw holes on the sides of the EBM and secure with eight supplied M4 flat-head screws (see Figure 7).

10. Align the two rear mounting brackets with the lowest two screw holes on the sides of the EBM and secure with four supplied M4 flat-head screws.

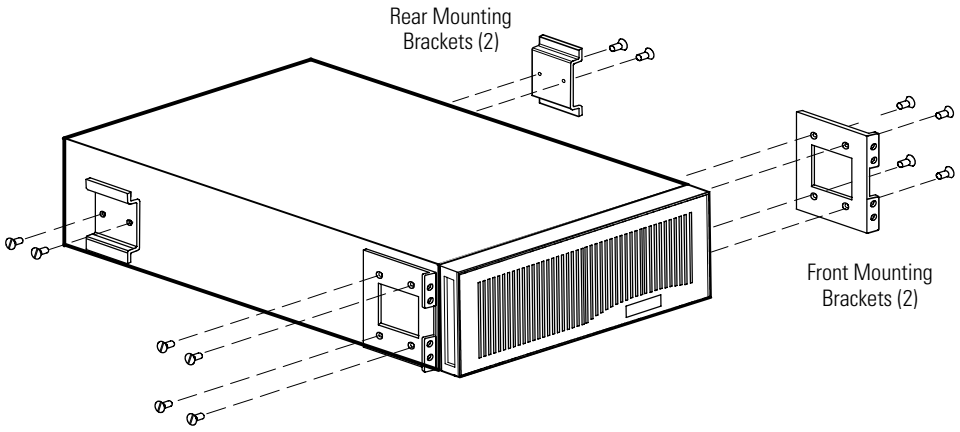


**Figure 7. Installing the EBM Front and Rear Mounting Brackets**

**11.** If installing the optional seismic mounting brackets, align the two EBM seismic mounting brackets with the screw holes on the sides of the EBM above the rear mounting brackets. Loosely secure the brackets with four supplied wing bolts. See Figure 8.

Do not tighten the wing bolts.

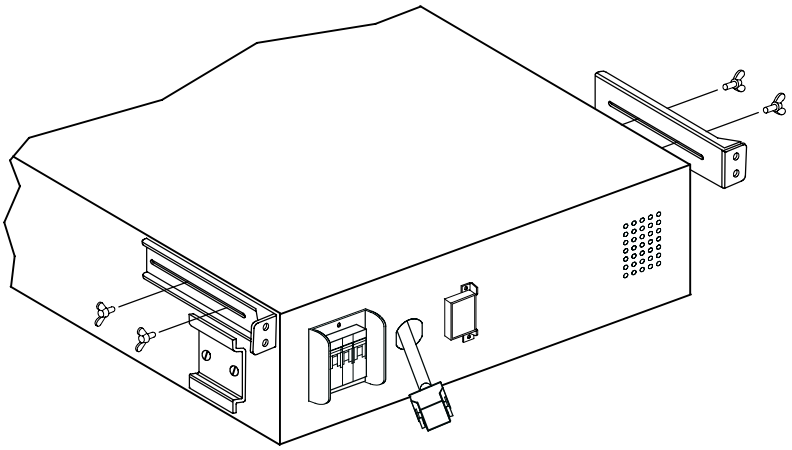

**Figure 8. Installing the Optional EBM Seismic Mounting Brackets**

**12.** Slide the EBM into the rack. Verify that the rear mounting brackets engage in and slide easily along the inside of the rails.

**13.** Secure the front of the cabinet to the rack as shown in Figure 9.

If the rack holes are square, use two cage nuts. If the rack holes are round, use two clip nuts.

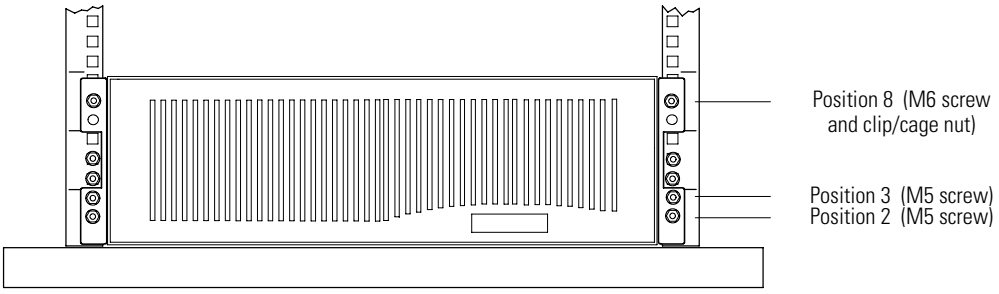


**Figure 9. Securing the Front of the EBM**

**14.** If the optional seismic mounting brackets are installed, secure the brackets on the EBM to the rack using four M6 machine screws as shown in Figure 10.

Tighten the wing bolts on the seismic mounting brackets.

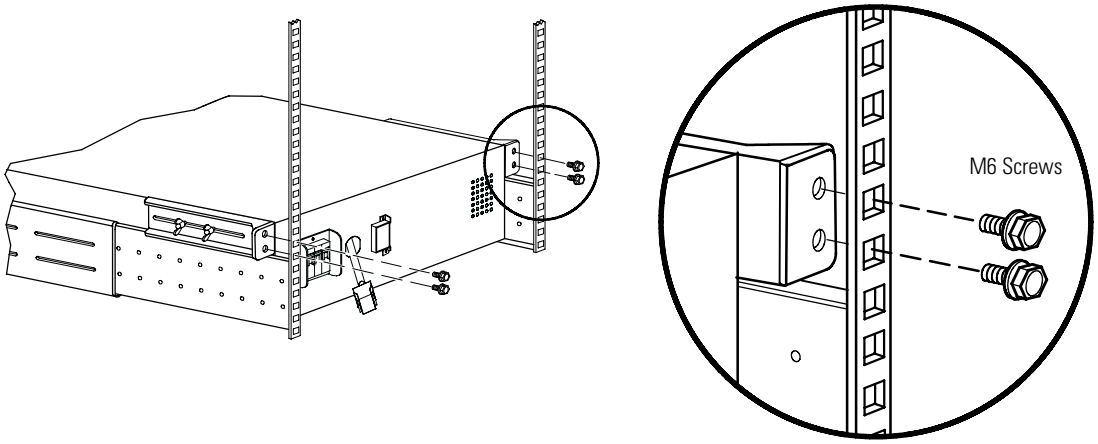


**Figure 10. Securing the Optional EBM Seismic Mounting Brackets**

## Installing the EBM Batteries

To install the battery trays into the EBM cabinet:

1. Verify that the battery circuit breakers on the EBM rear panel are in the OFF (O) position (see Figure 26 on page 41).

2. Remove the EBM front cover (see Figure 11).

   To remove the front cover, loosen the two front cover screws. Grasp the fingergrips on both sides of the cover and pull the cover forward firmly.

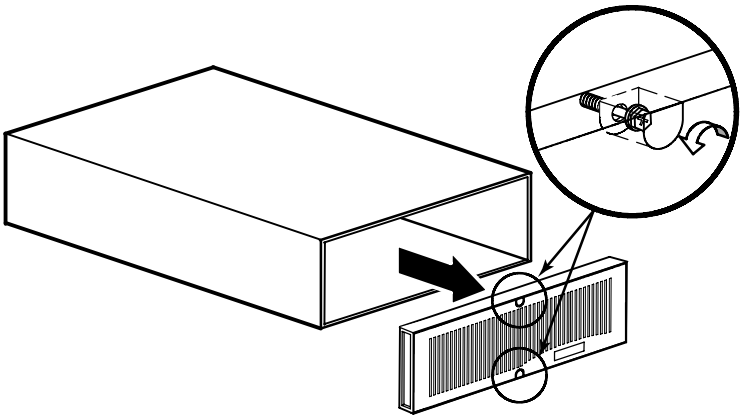

**Figure 11. Removing the EBM Front Cover**

3. Slide the battery trays into the cabinet (see Figure 12). Push each tray in until the battery tray lock on the handle catches to lock the tray in place.

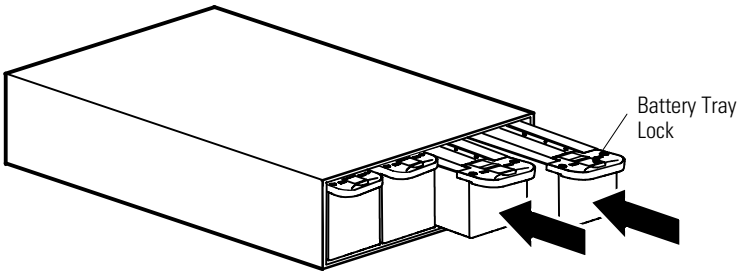


**Figure 12. Installing the Battery Trays**

4. Replace the EBM front cover and tighten the two front cover screws (see Figure 13).

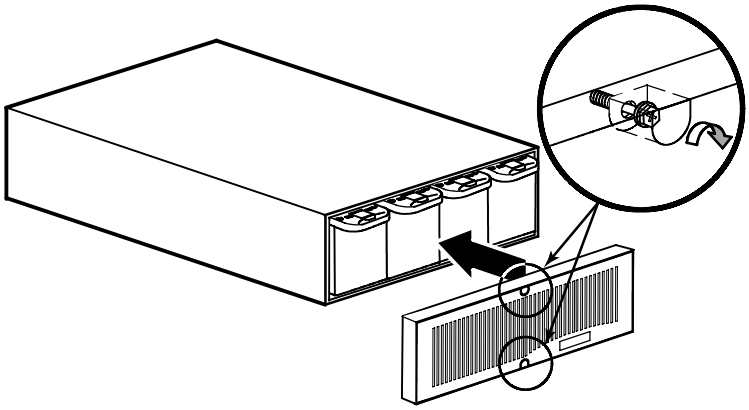

**Figure 13. Replacing the EBM Front Cover**

## UPS Setup

The Powerware 9140 UPS comes with all hardware required for installation in a standard EIA or JIS seismic rack-mount configuration with square and round mounting holes. The rail assemblies adjust to mount in 19-inch panel racks from 24 to 30 inches deep.

### Checking the UPS Accessory Kit

Verify that the following items are included with the UPS:

- Mounting brackets and fasteners (if not already installed):
  - (4) front mounting brackets
  - (2) rear mounting brackets
  - (20) M4 flat-head screws, plus (2) extra
- Rails and fasteners:
  - (2) sliding rail assemblies (left and right)
  - (4) adapter plates (7.1 mm round hole)
  - (4) adapter plates (9.5 mm square hole)
  - (16) M5 machine screws, plus (2) extra
  - (6) M6 machine screws, plus (4) extra
  - (6) M6 clip nuts for racks with round holes, plus (4) extra
  - (6) M6 cage nuts for racks with square holes, plus (4) extra
  - (8) M4 machine screws with (8) M4 locknuts, plus (2) extra of each
- Cables:
  - Serial cable
  - USB cable
- REPO connector
- (10) Ferrules (for use with hardwired models)
- Software Suite CD
- This user's guide
- Optional seismic mounting brackets and fasteners:
  - (2) UPS seismic mounting brackets
  - (8) wing bolts, plus (1) extra
  - (4) M6 machine screws

## Rack Setup for the UPS

**CAUTION**

The UPS is heavy (see page 85). A minimum of two people are required to remove the UPS from its carton.

***NOTE*** *Mounting rails are required for each individual cabinet.*

***NOTE*** *The recommended configuration is to install the optional EBM(s) in the lower part of the rack, with the UPS directly above the EBM(s).*

To install the UPS rail kit:

1. Select the proper holes in the rack for positioning the UPS in the rack (see Figure 14).

***NOTE*** *The UPS takes up position 1 through position 18.*

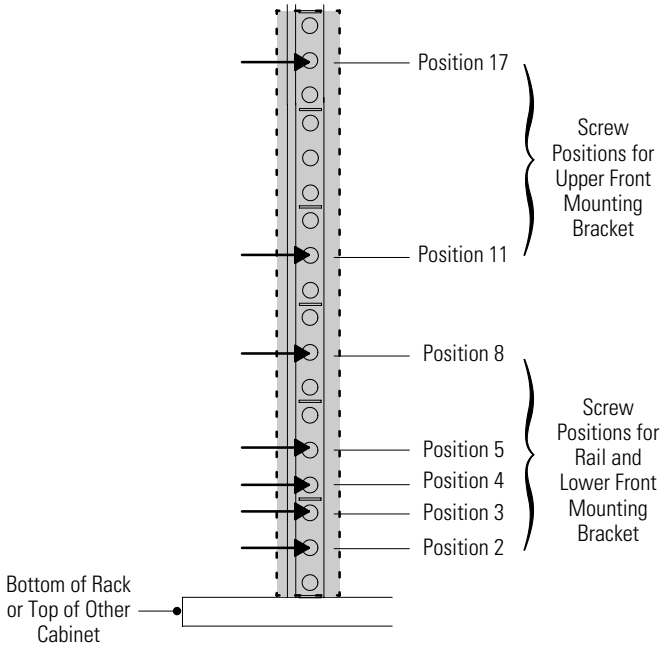


**Figure 14. Front Rail Screw Positions for the UPS**

2. Using two M5 machine screws and an adapter plate, attach the rail to the front of the rack (see Figure 14 and Figure 15).

   Do not tighten the screws.

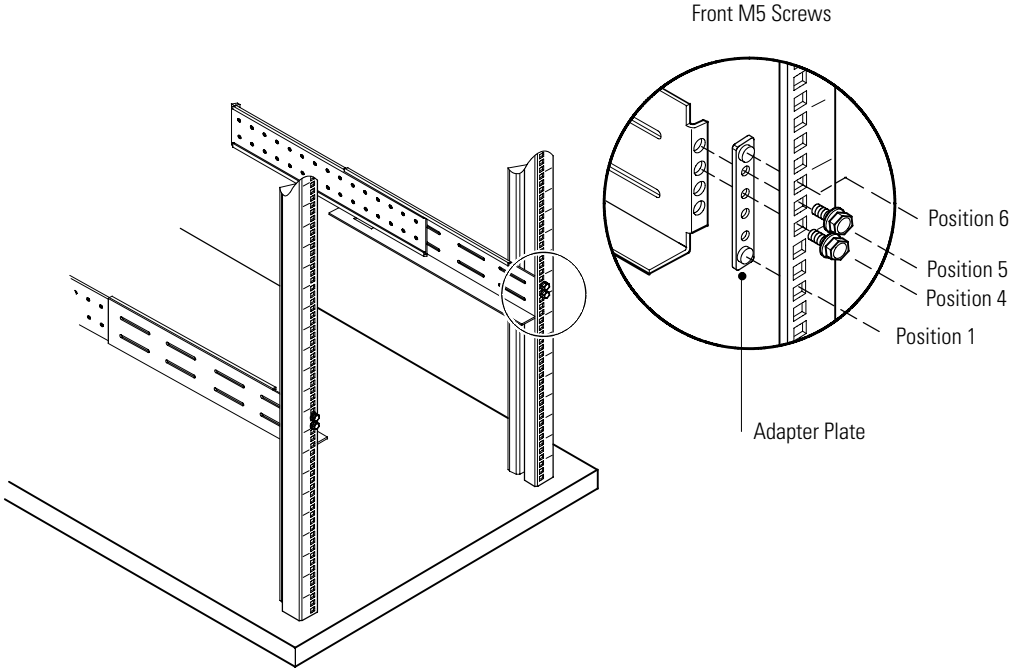


**Figure 15. Securing the Front Rail**

3. Adjust the rail size on the rail assembly for the depth of your rack (see Figure 16).

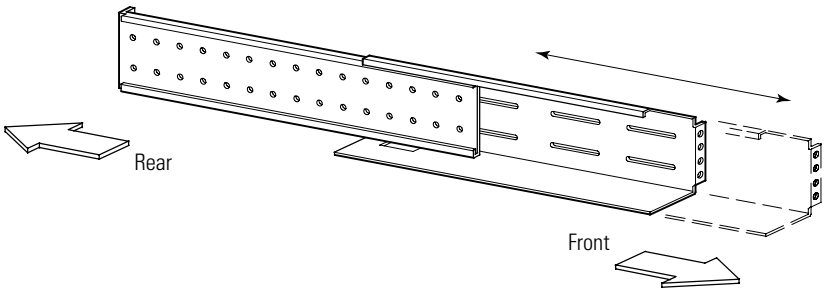


**Figure 16. Adjusting the Rail Depth (Right Rail Assembly Shown)**

4. Secure the rail to the rear of the rack with four M5 machine screws and an adapter plate (see Figure 17).

   Tighten all screws at the front and rear of the rail.

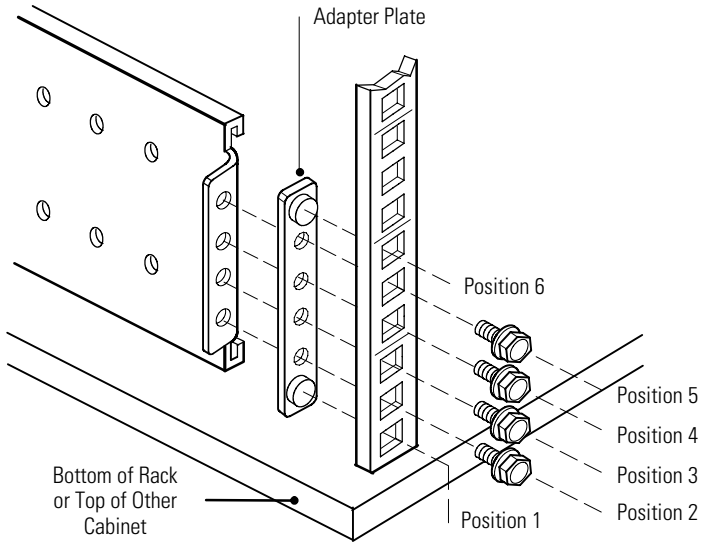


**Figure 17. Securing the Rear Rail (Right Rail Assembly Shown)**

5. Repeat Steps 2 through 4 for the other rail.

6. To tighten the rail adjustment, assemble four M4 machine screws and four M4 locknuts to the middle of the rail assembly. Tighten using a 7 mm (9/32") nut driver. See Figure 18.

   Repeat for the other rail.

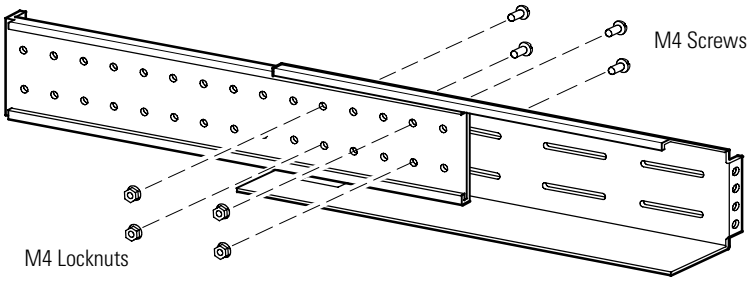


**Figure 18. Tightening the Rail Adjustment (Right Rail Assembly Shown)**

**CAUTION**

The UPS is heavy (see page 85). A minimum of two people are required to remove the UPS from its carton.

7. Place the UPS on a flat, stable surface with the front of the UPS facing toward you.

8. Remove the UPS front cover and the electronics module and set them aside (see Figure 19):

   **To remove the UPS front cover**, loosen the two front cover screws. Grasp the fingergrips on both sides of the cover and pull the cover forward firmly.

   **To remove the electronics module**, turn the module lock switch to the UNLOCK position. Grasp the handle at the bottom of the module and pull the module slowly out of the cabinet. Use two hands to support the module.

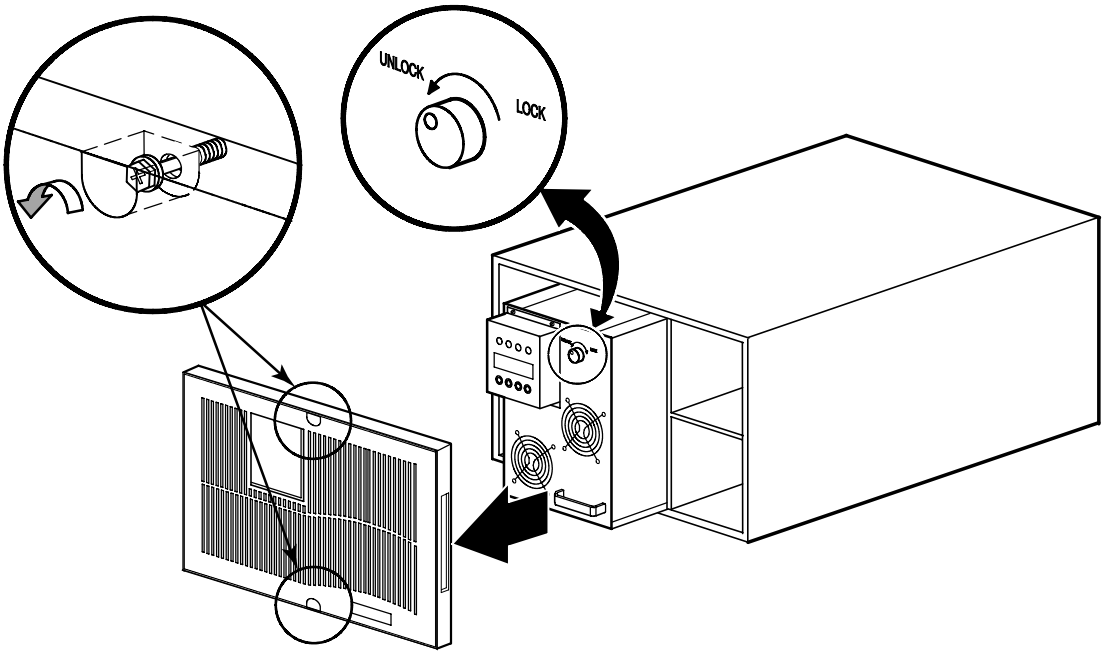


**Figure 19. Removing the UPS Front Cover and Electronics Module**

**9.** If the front and rear mounting brackets are already installed, skip to Step 12. If the brackets are not already installed, continue to Step 10.

**10.** Align the four front mounting brackets with the screw holes on the sides of the UPS and secure with 16 supplied M4 flat-head screws (see Figure 20).

**11.** Align the two rear mounting brackets with the lowest two screw holes on the sides of the UPS and secure with four supplied M4 flat-head screws.

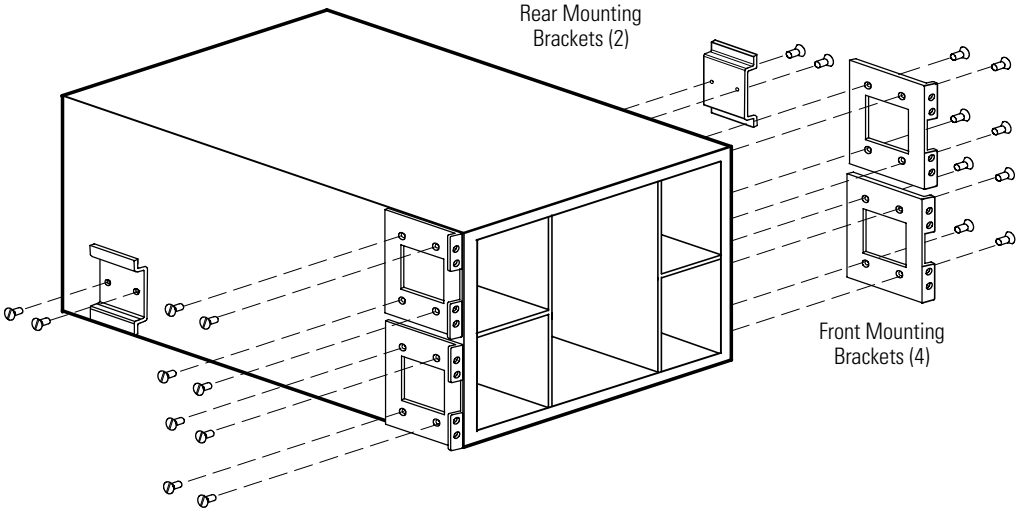


**Figure 20. Installing the UPS Front and Rear Mounting Brackets**

**12.** If installing the optional seismic mounting brackets, align the two UPS seismic mounting brackets with the screw holes on the sides of the UPS above the rear mounting brackets. Loosely secure the brackets with the eight supplied wing bolts. See Figure 21.

Do not tighten the wing bolts.

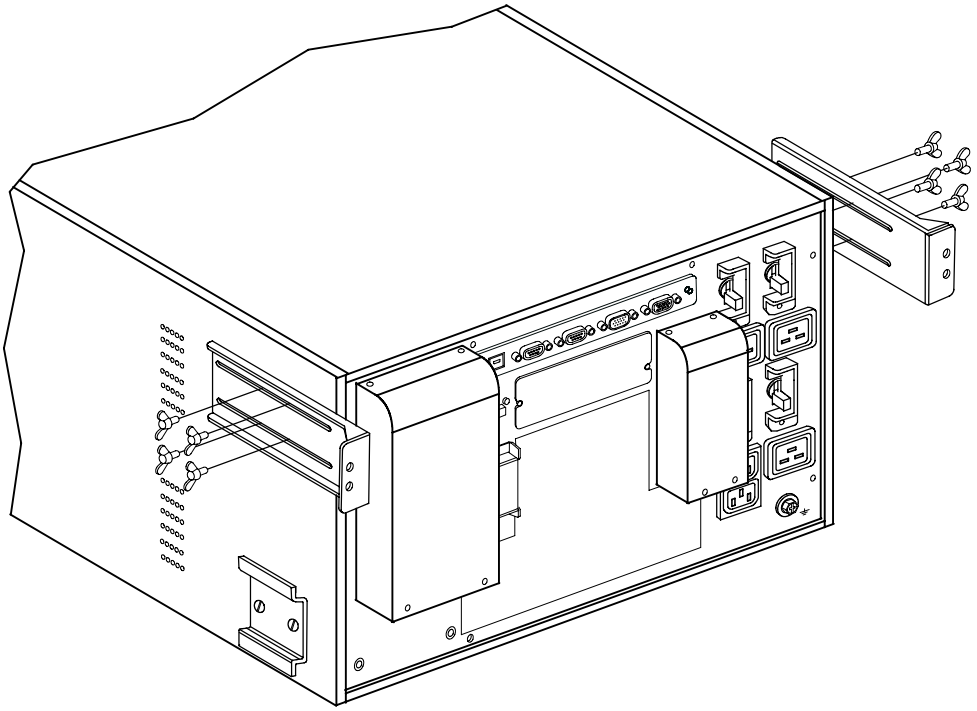

**Figure 21. Installing the Optional UPS Seismic Mounting Brackets**

**13.** Slide the UPS into the rack. Verify that the rear mounting brackets engage in and slide easily along the inside of the rails.

**14.** Secure the front of the cabinet to the rack as shown in Figure 22.

If the rack holes are square, use six cage nuts. If the rack holes are round, use six clip nuts.

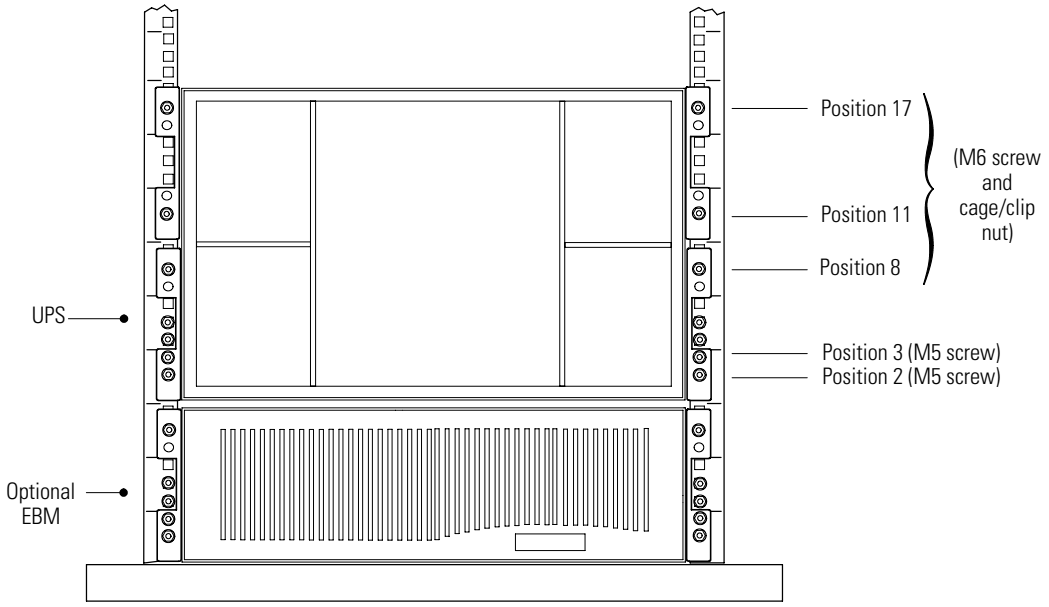


**Figure 22. Securing the Front of the UPS**

**15.** If the optional seismic mounting brackets are installed, secure the brackets on the UPS to the rack using four M6 machine screws as shown in Figure 23.

Tighten the wing bolts on the seismic mounting brackets.

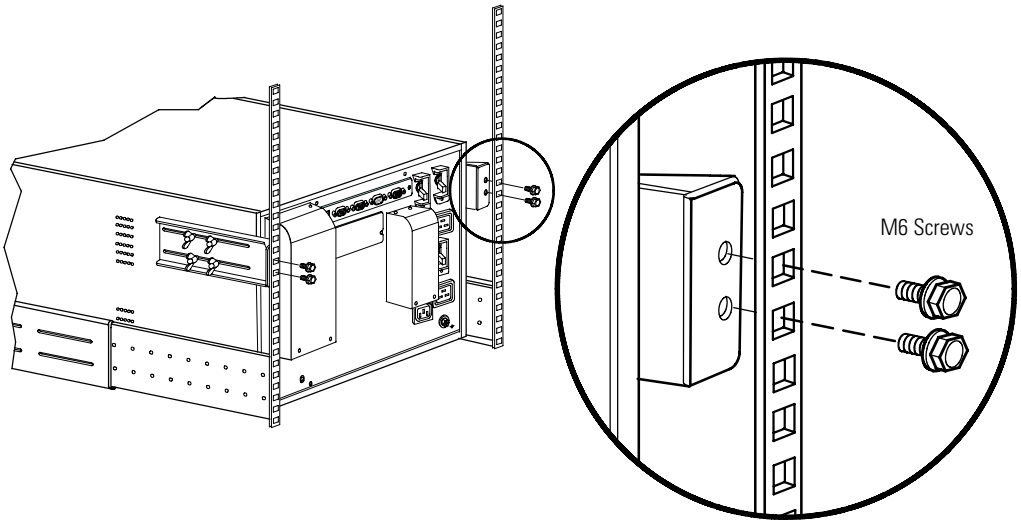


**Figure 23. Securing the Optional UPS Seismic Mounting Brackets**

**16.** Replace the electronics module by sliding it carefully into the cabinet. Verify that it seats against the rear of the cabinet.

Turn the module lock switch to the LOCK position.

## Installing the UPS Internal Batteries

To install the battery trays into the UPS cabinet:

1. Verify that the output circuit breakers on the UPS rear panel are in the OFF (O) position (see Figure 26 on page 41).
2. Slide the battery trays into the cabinet (see Figure 24). Push each tray in until the battery tray lock on the handle catches to lock the tray in place.

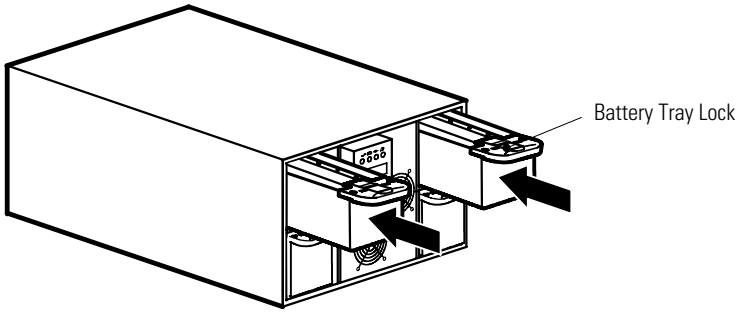


**Figure 24. Installing the Battery Trays**

3. Replace the UPS front cover and tighten the two front cover screws (see Figure 25).

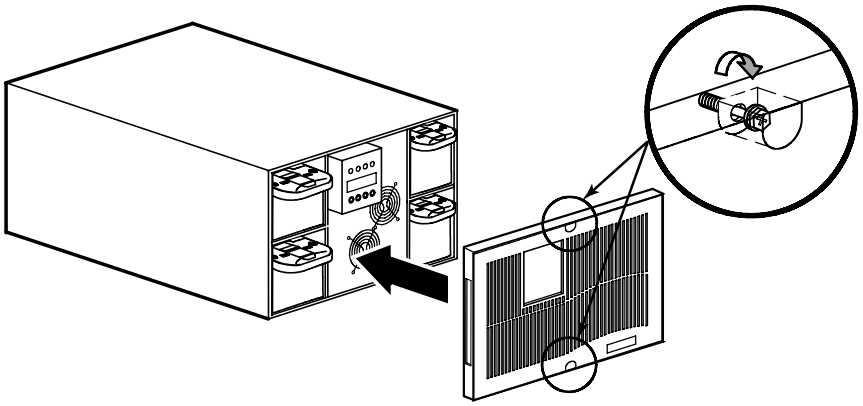

**Figure 25. Replacing the UPS Front Cover**

4. If you are installing an optional EBM, continue to the following section, "EBM Installation." Otherwise, continue to "UPS Installation" on page 42.

## EBM Installation

**CAUTION**

A small amount of arcing may occur when connecting an EBM to the UPS. This is normal and will not harm personnel. Insert the EBM cable into the UPS battery connector quickly and firmly.

To install the optional EBM(s):

1. Verify that all battery circuit breakers are in the OFF (O) position (see Figure 26).
2. Remove the cable retention clip from the UPS battery connector. Retain the clip and two screws.
3. Remove the cable retention clip from all EBM battery connectors except on the EBM installed in the lowest position in the rack. Retain the clips and screws.
4. Plug the EBM cable(s) into the battery connector(s) as shown in Figure 26. Up to four EBMs may be connected to the UPS.
5. Turn each cable retention clip 90 degrees and reinstall each clip to hold the EBM cable firmly in place.
6. Continue to the following section, "UPS Installation."

***NOTE*** *After UPS installation, ensure maximum battery runtime by configuring the UPS for the correct number of EBMs (see page 67).*

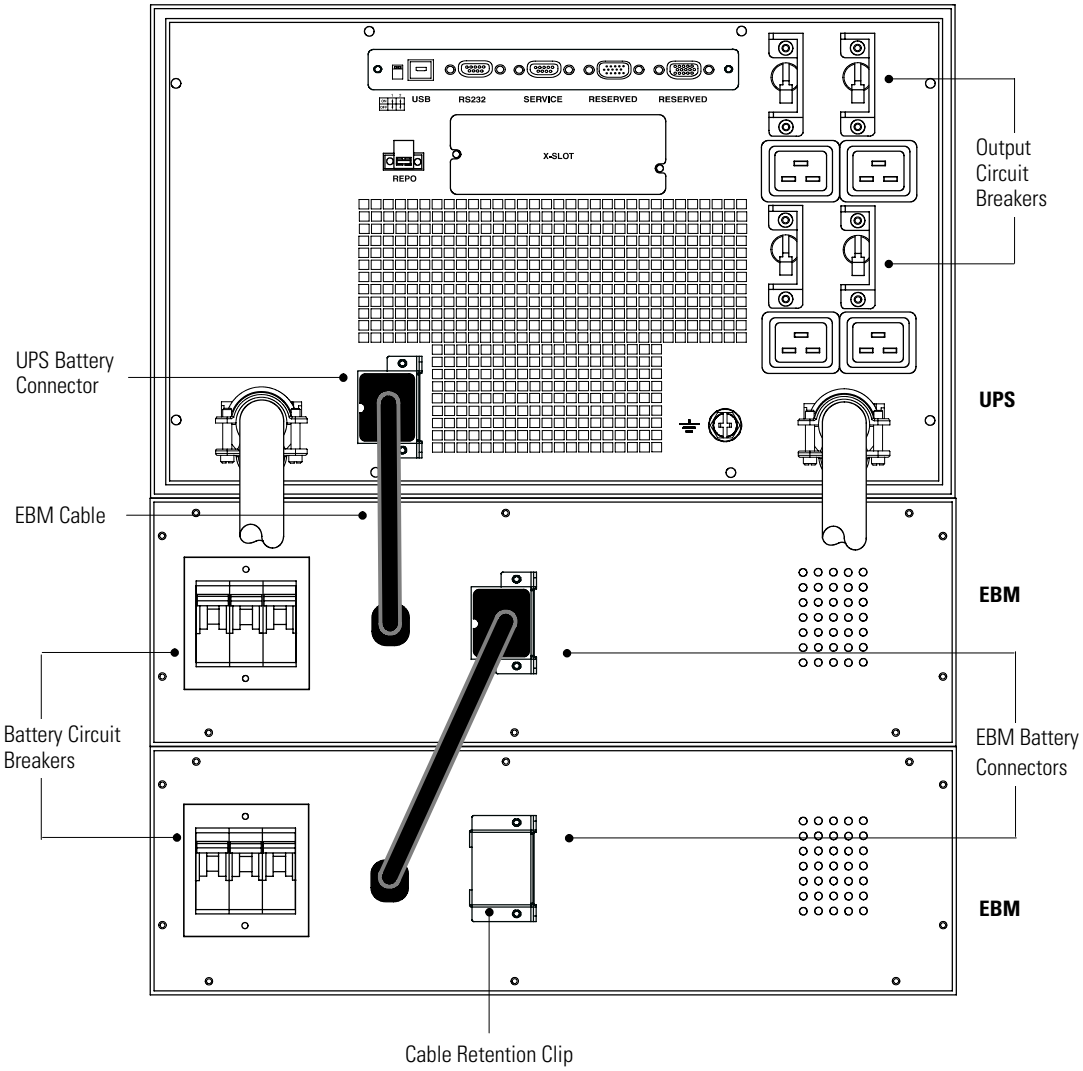


**Figure 26. Typical EBM Installation**

## UPS Installation

For the PW9140 10000 or PW9140 7500 model, see the following section, "Plug-Receptacle UPS Installation."

For the PW9140 10000 HW or PW9140 7500 HW model, see "Hardwired UPS Installation" on page 46.

### Plug-Receptacle UPS Installation

***NOTE*** *Do not make unauthorized changes to the UPS; otherwise, damage may occur to your equipment and void your warranty.*

The Powerware 9140 plug-receptacle models require a dedicated branch circuit that meets the following requirements:

- 60A (10 kVA models) or 50A (7.5 kVA models) circuit with short circuit and overcurrent protection
- 200–240 Vac
- 50/60 Hz
- The breaker must be wall-mounted and be readily accessible to the operator
- Flexible metal conduit (recommended for ease of service and maintenance)

To install a plug-receptacle UPS:

1. Verify that all circuit breakers are in the OFF (O) position.
2. If you are installing power management software, connect your computer to the USB port, UPS communication port, or optional X-Slot card (see page 69). For the communication port, use the supplied serial cable.
3. If your rack has conductors for grounding or bonding of ungrounded metal parts, connect the ground cable (not included) to the ground bonding screw. See Figure 27 on page 44 for the location of the ground bonding screw.

***NOTE*** *DO NOT protect laser printers with the UPS because of the exceptionally high power requirements of the heating elements.*

***NOTE*** *Verify that the total equipment ratings do not exceed the UPS capacity to prevent an overload alarm.*

4. Plug the equipment to be protected into the UPS output receptacles, but do not turn on the protected equipment (see Figure 27).

5. Make any necessary provisions for cord retention and strain relief.

6. If an emergency power-off (disconnect) switch is required by local codes, see "REPO and ROO Installation" on page 54 to install the REPO switch before powering on the UPS.

   If you are not required to install a REPO switch, you can install an optional remote on/off (ROO) switch (see page 54).

7. Switch all circuit breakers to the ON ( | ) position.

8. Plug the UPS input power cord into an IEC 309-60A power outlet.

   The ⏦ indicator flashes, indicating the UPS is in Standby mode with the equipment offline. The fans run and the LCD illuminates and displays the UPS startup screens.

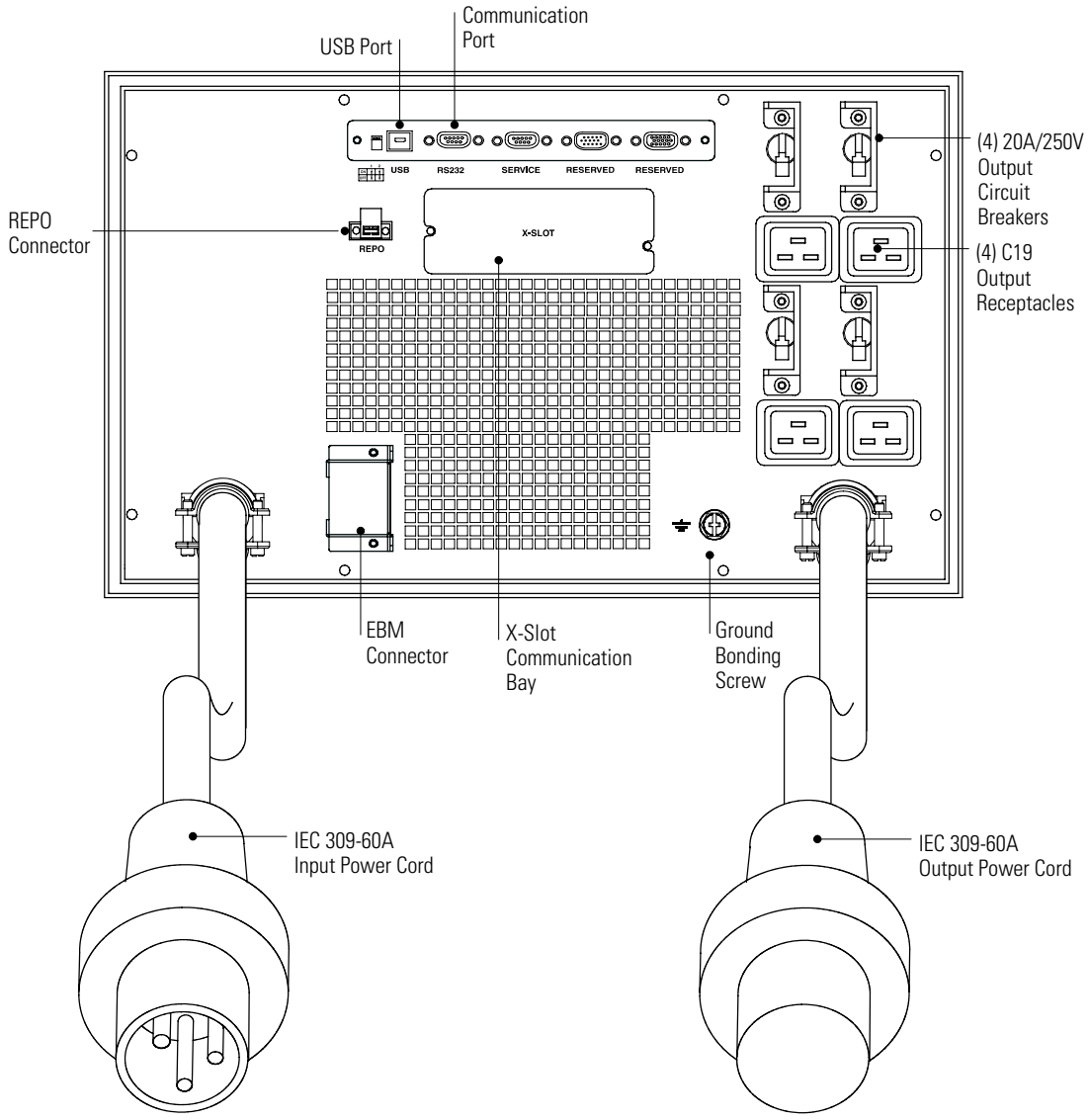


**Figure 27. Plug-Receptacle UPS Rear Panel**

**9.** To change the factory-set defaults, see "User Settings" on page 60.

**10.** Turn the UPS on by selecting MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO ONLINE, and OK to confirm.

The ⏻ indicator illuminates solid. The UPS is now in Normal mode and supplying power to your equipment.

If the alarm beeps or a UPS alarm indicator stays on, see "Troubleshooting" on page 89.

**11.** If you installed an optional REPO or ROO, test the REPO or ROO function:

Activate the external REPO or ROO switch. Verify the status change on the UPS display.

Deactivate the external REPO or ROO switch and restart the UPS.

**12.** If optional EBMs are installed, continue to "Configuring the UPS for EBMs" on page 67.

***NOTE*** *The batteries charge to 80% capacity in less than 5 hours. However, it is recommended that the batteries charge for 48 hours after installation or long-term storage.*

## Hardwired UPS Installation

**WARNING**

Only qualified service personnel (such as a licensed electrician) shall perform the electrical installation. Risk of electrical shock.

***NOTE*** *Do not make unauthorized changes to the UPS; otherwise, damage may occur to your equipment and void your warranty.*

The Powerware 9140 hardwired models require a dedicated branch circuit that meets the following requirements:

- **For single-phase:** 60A (10 kVA models) or 50A (7.5 kVA models) circuit with short circuit and overcurrent protection

  **For three-phase:** 30A (10 kVA models) or 20A (7.5 kVA models) circuit with short circuit and overcurrent protection. A separate single-phase input must have a 60A (10 kVA models) or 50A (7.5 kVA models) breaker connected to the bypass input.
- 200–240 Vac
- 50/60 Hz
- The breaker must be wall-mounted and be readily accessible to the operator
- Flexible metal conduit (recommended for ease of service and maintenance)

To hardwire the UPS:

1. Verify that all circuit breakers are in the OFF (O) position.
2. If you are installing power management software, connect your computer to the USB port, UPS communication port, or optional X-Slot card (see page 69). For the communication port, use the supplied serial cable.

3. Switch off utility power at the distribution point where the UPS will be connected. Be absolutely sure there is no power.

4. Remove the input and output terminal block covers and retain (see Figure 28).

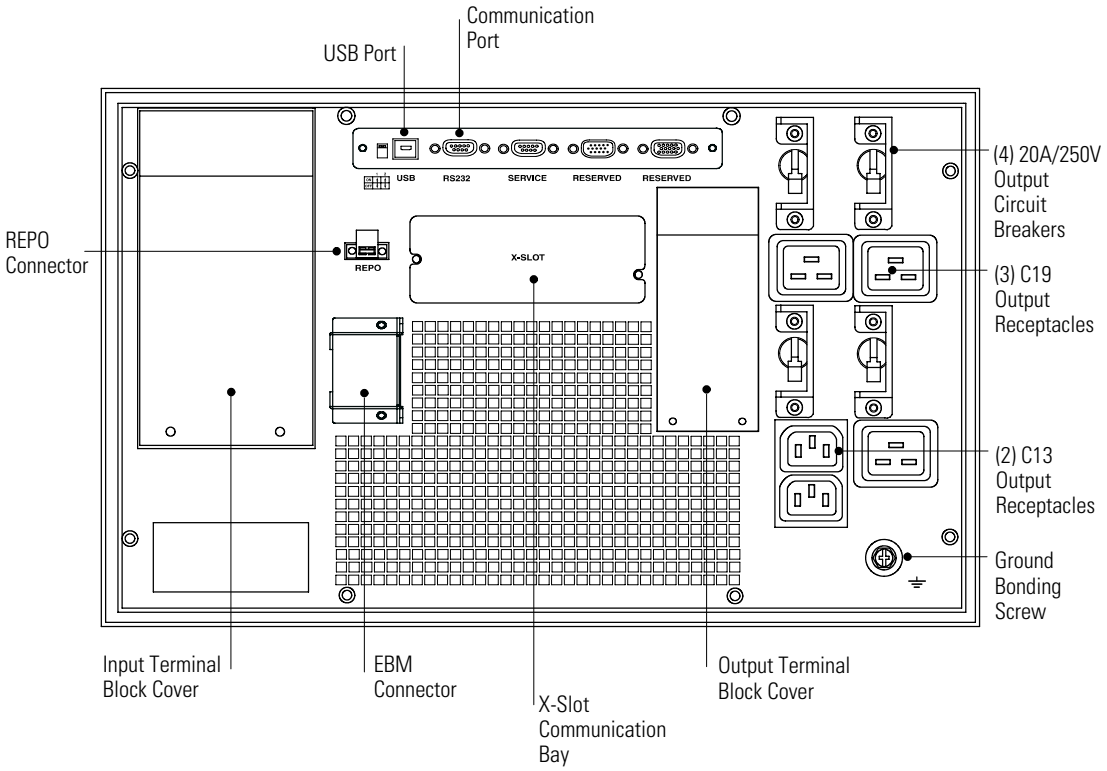


**Figure 28. Hardwired UPS Rear Panel**

5. Follow the instructions for the input configuration to be used with the UPS:

   **For single-phase, single input feed** (see Figure 29), the input bypass terminal block is factory-wired. The L1-JP and L pins are connected by a short jumper wire, and the bypass is connected to the input terminal block's L1 automatically.

   **For single-phase, dual input feed** (see Figure 30), remove the short jumper wire connecting the L1-JP and L pins so that you can connect the second feed to the input bypass terminal block later in this procedure.

   **For three-phase, dual input feed** (see Figure 31), remove the short jumper wire connecting the L1-JP and L pins so that you can connect the second feed to the input bypass terminal block later in this procedure. Only a Y-type (star, 5-wire) input is supported. A delta (4-wire) input is NOT supported. Connect 380–415V L to L, 220–240V L to N. 208/120V three-phase input is NOT supported.

***NOTE*** *Neutrals are bonded inside the terminal block. Wire the input and bypass terminal blocks so they share the same ground and neutral and have inputs of the same frequency.*

***NOTE*** *Install no more than one wire per terminal.*

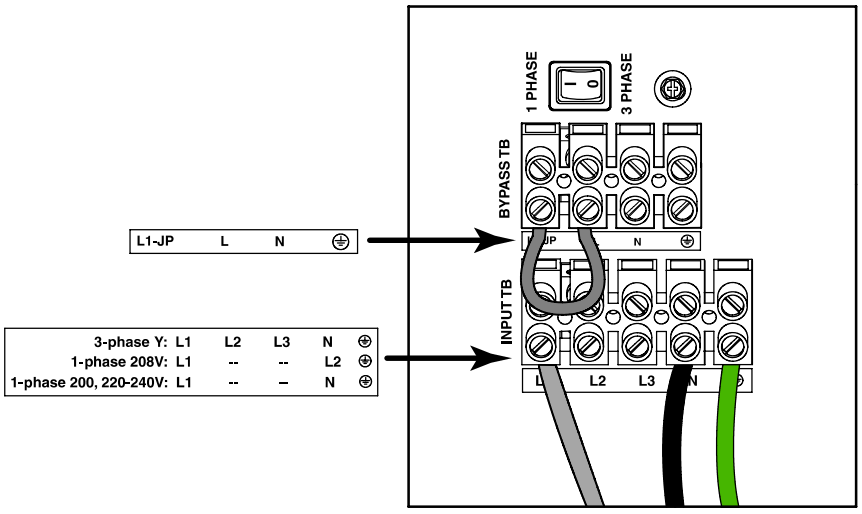


**Figure 29. Single Input Feed (Single-Phase)**

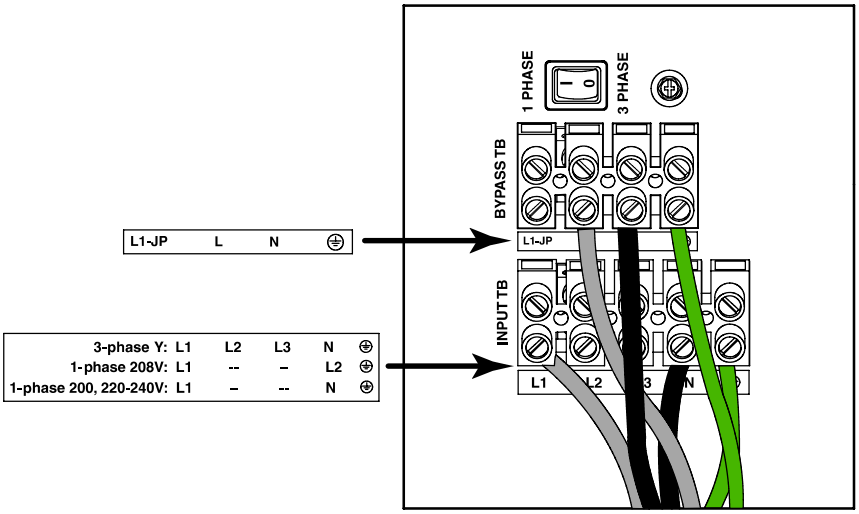


**Figure 30. Dual Input Feed (Single-Phase)**

***NOTE*** *Per NEC article 300-20(a), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.*

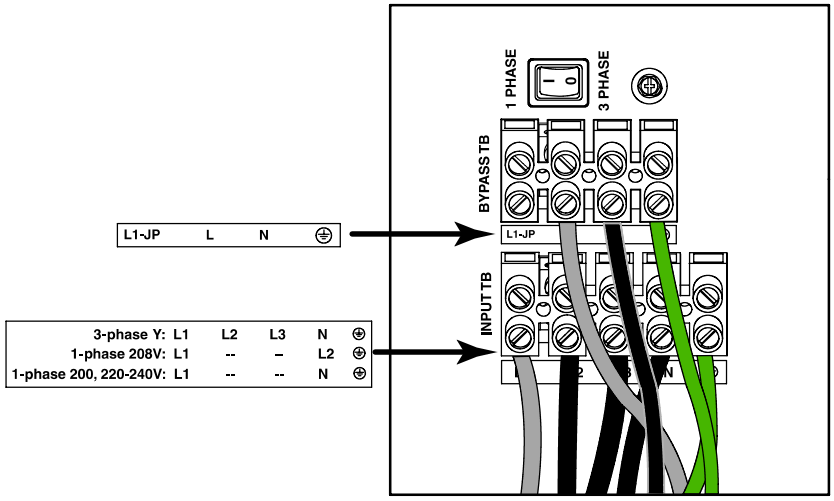


**Figure 31. Dual Input Feed (Three-Phase)**

6. Punch holes in the terminal block covers for the input, input bypass (dual input feed only), and output conduit using a Greenlee® punch or similar device. The holes accommodate up to 2″ IMC conduit.

7. Pull the input, input bypass (dual input feed only), and output wires through separate conduit, leaving approximately 15 cm (6″) of exposed wire. Attach a flexible metal fitting to the end of each conduit.

8. Insert each conduit through a wiring access entry and attach the conduit fitting to the panel. Strip 1.5 cm (0.5″) of insulation from the end of each incoming wire.

9. Connect the input and ground wires to the input terminal block according to Figure 32 and Table 1.

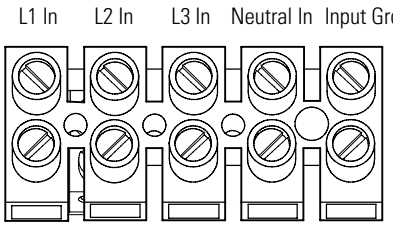


**Figure 32. UPS Input Terminal Block**

**Table 1. UPS Input Wiring Specifications**

| UPS Terminal Block | Terminal Position | UPS Wire Function | Terminal Wire Size Rating[1] | Tightening Torque |
|---|---|---|---|---|
| Input | 1 | L1 In | 13.3 mm² (6 AWG) | 1.8 Nm (16 lb in) |
| | 2 | L2 In | | |
| | 3 | L3 In | | |
| | 4 | Neutral In[2] | | |
| | 5 | Input Ground[3] | | |

[1] Use 13.3 mm² (6 AWG) 90°C copper wire minimum. For ease of installation, use appropriately sized ferrules on the end of each wire.
[2] For single-phase 208V only, in North America and Japan, utility L2 connects to UPS neutral; for most other countries (200, 220-240V), utility neutral connects to UPS neutral.
[3] The ground screw on the input terminal block can be used for input ground if an appropriate ring lug is available.

**10.** Connect the input bypass and ground wires to the input bypass terminal block according to Figure 33 and Table 2.

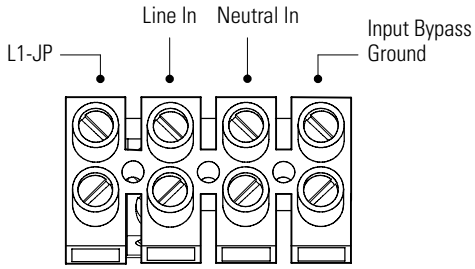


**Figure 33. UPS Input Bypass Terminal Block**

**Table 2. UPS Input Bypass Wiring Specifications**

| UPS Terminal Block | Terminal Position | UPS Wire Function | Terminal Wire Size Rating* | Tightening Torque |
|---|---|---|---|---|
| Input Bypass | 1 | L1-JP | 13.3 $mm^2$ (6 AWG) | 1.8 Nm (16 lb in) |
| | 2 | Line In | | |
| | 3 | Neutral In | | |
| | 4 | Input Bypass Ground | | |

* Use 13.3 $mm^2$ (6 AWG) 90°C copper wire minimum. For ease of installation, use appropriately sized ferrules on the end of each wire.

**11.** Connect the output and ground wires to the output terminal block according to Figure 34 and Table 3.

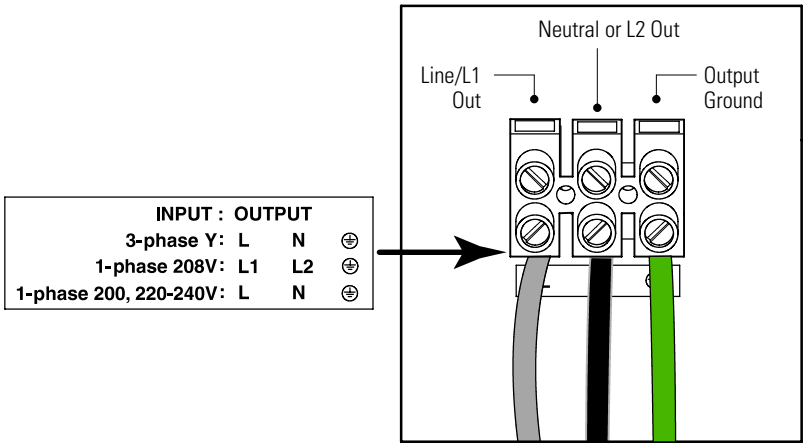


**Figure 34. UPS Output Terminal Block**

**Table 3. UPS Output Wiring Specifications**

| UPS Terminal Block | Terminal Position | UPS Wire Function | Terminal Wire Size Rating[1] | Tightening Torque |
|---|---|---|---|---|
| Output | 1 | Line / Line 1 Out | 13.3 mm² (6 AWG) | 1.8 Nm (16 lb in) |
| | 2 | Neutral Out[2] | | |
| | 3 | Output Ground | | |

[1] Use 13.3 mm² (6 AWG) 90°C copper wire minimum. For ease of installation, use appropriately sized ferrules on the end of each wire.
[2] Line 2 Out (single-phase 208V only).

**12.** Set the phase input selector switch for single-phase or three-phase input. See Figure 31 on page 49 for the location of the switch.

***NOTE*** *The UPS will not operate if the input is wired for single-phase and the selector switch is set for three-phase. If the input is wired for three-phase and the selector switch is set for single-phase, the UPS will operate on single-phase.*

***NOTE*** *Resetting the phase input selector switch while the UPS is running has no effect on UPS operation. The UPS reads the position of the switch only when powering on.*

13. Replace the input and output terminal block covers.

14. If your rack has conductors for grounding or bonding of ungrounded metal parts, connect the ground cable (not included) to the ground bonding screw. See Figure 28 on page 47 for the location of the ground bonding screw.

***NOTE*** *DO NOT protect laser printers with the UPS because of the exceptionally high power requirements of the heating elements.*

***NOTE*** *Verify that the total equipment ratings do not exceed the UPS capacity to prevent an overload alarm.*

15. Plug the equipment to be protected into the UPS output receptacles, but do not turn on the protected equipment (see Figure 28 on page 47).

16. Make any necessary provisions for cord retention and strain relief.

17. If an emergency power-off (disconnect) switch is required by local codes, see "REPO and ROO Installation" on page 54 to install the REPO switch before powering on the UPS.

    If you are not required to install a REPO switch, you can install an optional remote on/off (ROO) switch (see page 54).

18. Switch all circuit breakers to the ON ( | ) position.

19. Switch the main utility breaker on.

    The ⏦ indicator flashes, indicating the UPS is in Standby mode with the equipment offline. The fans run and the LCD illuminates and displays the UPS startup screens.

20. To change the factory-set defaults, see "User Settings" on page 60.

21. Turn the UPS on by selecting MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO ONLINE, and OK to confirm.

    The ⏦ indicator illuminates solid. The UPS is now in Normal mode and supplying power to your equipment.

    If the alarm beeps or a UPS alarm indicator stays on, see "Troubleshooting" on page 89.

22. If you installed an optional REPO or ROO, test the REPO or ROO function:

    Activate the external REPO or ROO switch. Verify the status change on the UPS display.

    Deactivate the external REPO or ROO switch and restart the UPS.

23. If optional EBMs are installed, continue to "Configuring the UPS for EBMs" on page 67.

***NOTE*** *The batteries charge to 80% capacity in less than 5 hours. However, it is recommended that the batteries charge for 48 hours after installation or long-term storage.*

## REPO and ROO Installation

The Powerware 9140 includes a two-position terminal (see Figure 35) that can be either left open or configured one of two ways:

- **As a remote emergency power-off (REPO) contact** that allows power to be switched off at the UPS output from a customer-supplied switch in a remote location.
- **As a remote on/off (ROO) contact** that allows the UPS to be turned on and off from a customer-supplied switch in a remote location.

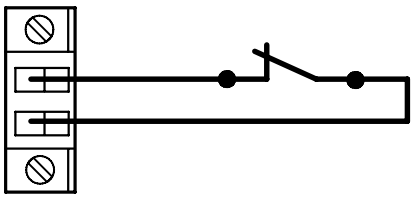

**Figure 35. REPO/ROO Connection**

**WARNING**

The REPO/ROO circuit is an IEC 60950 safety extra low voltage (SELV) circuit. This circuit must be separated from any hazardous voltage circuits by reinforced insulation.

**CAUTION**

To ensure the UPS stops supplying power to the load during any mode of operation, the input power must be disconnected from the UPS when the emergency power-off function is activated.

***NOTE*** *The REPO function activates when the REPO contacts close.*

***NOTE*** *For Europe, the emergency switch requirements are detailed in Harmonized document HD-384-48 S1, "Electrical Installation of the Buildings, Part 4: Protection for Safety, Chapter 46: Isolation and Switching."*

For more information about how the REPO and ROO features function, see "Remote Emergency Power-off and Remote On/Off" on page 70.

To install the REPO or ROO switch:

1. Verify that the UPS is off and disconnected from utility power.
2. Insert the REPO connector (provided in the accessory kit) into the REPO port on the UPS rear panel. See Figure 38 on page 69 for the location of the REPO port.
3. Refer to the following table to plan the REPO or ROO behavior:

| REPO | Contact Open | Contact Closed |
|---|---|---|
| NC | Shutdown | Online |
| NO | Online | Shutdown |
| **ROO** | **Contact Open** | **Contact Closed** |
| NC | Online | Standby |
| NO | Standby | Online |

**WARNING**

This connector must only be connected to an IEC 60950 safety extra low voltage (SELV) circuit. This circuit must be separated from any hazardous voltage circuits by reinforced insulation.

4. Connect the switch or circuit to the REPO connector using non-shielded 0.82 $mm^2$–0.33 $mm^2$ (18–22 AWG) wire.

***NOTE*** *For REPO, a separate contact must simultaneously cause UPS input AC power to be removed.*

5. Verify that the externally-connected REPO or ROO switch is not activated to enable power to the UPS output receptacles.
6. Plug in or apply utility power to the UPS. The UPS enters Standby mode.
7. **To configure the UPS for REPO behavior**, select MENU from the system status screen, then select SETUP, USER SETUP, and CONTACT CONFIG.

   Set CONTACT USAGE to REPO. Then set CONTACT TYPE to either normally-open (N/O) or normally closed (N/C).
8. **To configure the UPS for ROO behavior**, select MENU from the system status screen, then select SETUP, USER SETUP, and CONTACT CONFIG.

   Set CONTACT USAGE to REMOTE ON/OFF. Then set CONTACT TYPE to either normally-open (N/O) or normally closed (N/C).
9. **REPO only.** Start the UPS by selecting MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO ONLINE, and OK to confirm.
10. Activate the external REPO or ROO switch to test the function. Verify the status change on the UPS display.
11. **REPO only.** De-activate the external REPO switch and restart the UPS.

# Chapter 4 Operation

This chapter contains information on how to use the Powerware 9140, including front panel operation, operating modes, UPS startup and shutdown, configuring the UPS for Extended Battery Modules (EBMs), initiating the battery test, and transferring the UPS between modes.

## Control Panel Functions

The UPS has a four-button, two-line graphical LCD with backlight. It provides useful information about the UPS itself, load status, events, measurements, and settings (see Figure 36).

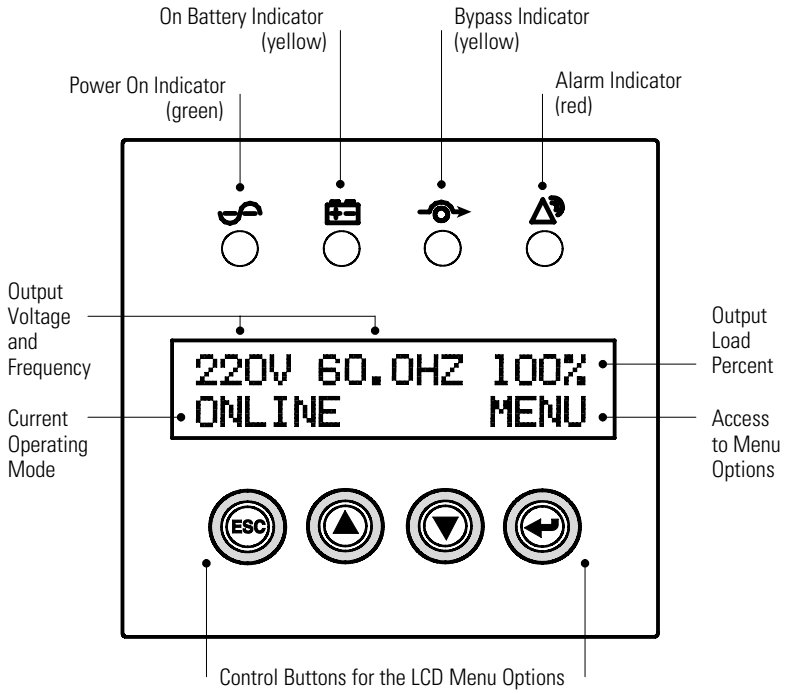


**Figure 36. Powerware 9140 Control Panel (System Status Screen Shown)**

The following table shows the indicator status and description.

| Indicator | Status | Description |
|---|---|---|
| Green | On | The UPS is operating normally. |
| | Slow Flash | The UPS is in Standby mode. |
| | Fast Flash | The UPS is starting up. |
| | Off | The UPS is turned off and will not turn on automatically. |
| Yellow | On | The UPS is in Battery mode. |
| | Slow Flash | The UPS is in Battery mode and a Low Battery condition is detected. |
| | Fast Flash | A battery test is in progress. |
| Yellow | On | The UPS is in Bypass mode. |
| | Slow Flash | Bypass mode in unavailable because the input utility is outside the configured bypass range. |
| Red | On | The UPS has an active critical alarm and is not supporting the load. See “Troubleshooting” on page 89 for additional information. |
| | Slow Flash | The UPS has an active warning alarm and is supporting the load. See “Troubleshooting” on page 89 for additional information. |
| All LEDs | Slow Flash | The UPS is powering down and the load is no longer supported. |
| | Cycling | A UPS flash upgrade is in progress. |

## Changing the Language

To change the language setting, select MENU from the system status screen, then select SETUP, USER SETUP, and LANGUAGE. Scroll through the available options and press the ↵ button to select the language.

## Display Functions

When the UPS starts up, the LCD displays the Eaton Powerware logo and the type of UPS.

About 5 seconds after startup or after 15 minutes of inactivity, the LCD displays the system status screen. The system status screen shows the output voltage, output frequency, output load percent, and the current operating mode (see Figure 36 on page 57).

The backlit LCD automatically dims after a long period of inactivity. Press any button to restore the screen.

From the system status screen, press the ↵ button to select MENU. Use the two middle buttons (▲ and ▼) to scroll through the menu structure. Press the ↵ button to select an option or enter a submenu. Press the **ESC** button to cancel or return to the previous menu.

The following table shows the basic menu structure.

**Table 4. Menu Map for Display Functions**

| Main Menu | Submenu | Display Information or Menu Function |
|---|---|---|
| Control | Output Control | Turn the UPS on and off / Transfer to other modes |
| | Battery Test | Cancel a test / Schedule a test / View a test report |
| Status | Active Alarms | Display any active alarms |
| | UPS Output | Display the voltage, current, frequency, load, current, watts, and VA |
| | UPS Input | Display the current utility voltage and frequency |
| | Battery | Display the current positive and negative battery voltages, percent battery charge, and expected battery runtime in minutes |
| | DC Link | Display the current positive and negative rail voltages |
| | System | Display the system runtime (days/hrs/min/sec) |
| Alarm History | | Display the most recent 50 events and alarms, by description, alarm number, and time (day/hr/mins/sec in system runtime). |
| Model Info | | UPS Type / UPS Serial Number / UPS Part Number / Firmware Version |
| Setup | User Setup | See Table 5 for detail. |
| | Service Setup | This screen is password-protected. |

## User Settings

The following table displays the options that can be changed by the user.

**Table 5. User Settings**

| Description | Available Settings | Default Setting |
|---|---|---|
| O/P (Output) Frequency* | [50 Hz][60 Hz][Auto] | Auto |
| O/P (Output) Voltage | [200V][208V][220V][230V][240V][Auto]<br><br>NOTE If Auto is selected, input voltages <220V are set to 208V, and input voltages ≥220V are set to 230V. O/P Voltage changes from Auto to the sensed voltage setting. | Auto |
| Buzzer Alarm | [Enabled][Disabled] | Enabled |
| Battery Pack | 1 through 5<br><br>NOTE A value of 1 indicates the UPS internal batteries only. See "Configuring the UPS for EBMs" on page 67. | 1 |
| Battery Test | Automatic Test: [Enabled][Disabled]<br>Test Period: 7–90 days<br>Test Time: 1–99 minutes | Enabled<br>14<br>1 |
| DC Start | [Enabled][Disabled] | Shipped: Disabled<br>After one startup and shutdown sequence: Enabled |
| Auto Restart | [Enabled][Disabled] | Enabled |
| UPS ID | 0 through 3<br><br>NOTE This option is not used. | 0 |
| Language | Select Language: <English> <Spanish> <French> <German> <Finnish> | English |
| XCP Load Control | [Enabled][Disabled] | Enabled |
| Upper Bypass V | +0 through +20% (1% increments) | +20% |
| Lower Bypass V | -0 through -20% (1% increments) | -20% |

* Changes to these options should be made before turning on the UPS (while the UPS is in Standby mode); otherwise, the changes do not take effect.

**Table 5. User Settings (continued)**

| Description | Available Settings | Default Setting |
|---|---|---|
| Bypass Freq Dev<br>(Bypass Frequency Deviation Limits) | 1 through 5 Hz (1 Hz increments)<br><br>NOTE This value sets the limits from 1 Hz to 5 Hz of the nominal output configuration. The value cannot be set lower than the current Utility Sync Window limit defined in the Service Menu. | 5 Hz |
| Qualify Bypass | [Enabled][Disabled]<br><br>NOTE This setting enables or disables the bypass qualification rules. If the UPS is not able to sync with the Bypass utility, the value is Enabled even if set to Disabled. No transfer to an out-of-sync Bypass utility is permitted. | Enabled |
| Allow Bypass | [Enabled][Disabled] | Enabled |
| Set Baud Rate | Port 1 (RS232): [19200] [9600] [2400] [1200]<br>Port 2 (SERVICE): [19200] [9600] [2400] [1200] | 9600 |
| Set Site (Wiring) Fault | [Enabled][Disabled] | Disabled |
| Contact Config* | Contact Usage: [REPO][ROO][Disabled]<br>Contact Type: [N/O][N/C] | REPO<br>N/O |

* Changes to these options should be made before turning on the UPS (while the UPS is in Standby mode); otherwise, the changes do not take effect.

## Operating Modes

The Powerware 9140 front panel indicates the UPS status through the UPS indicators. Figure 36 on page 57 shows the UPS front panel indicators and controls. Figure 37 shows the internal circuit configuration.

### Normal Mode

During Normal mode, the indicator illuminates solid and the UPS is powered from the utility. The UPS monitors and charges the batteries as needed and provides regulated and filtered power protection to your equipment.

### Battery Mode

When the UPS is operating during a power outage, the alarm beeps once every five seconds and the indicator illuminates solid.

When the utility power returns, the UPS transfers to Normal mode operation while the battery recharges.

If battery capacity becomes low while in Battery mode, the indicator flashes slowly and the alarm becomes continuous. If the Battery Low alarm is set, the indicator also illuminates solid. This warning is approximate, and the actual time to shutdown may vary significantly.

***NOTE*** *Depending on the UPS load and the number of Extended Battery Modules (EBMs), the Battery Low warning may occur before the batteries reach 25% capacity. See Table 13 on page 88 for estimated runtimes.*

When utility power is restored after the UPS shuts down, the UPS automatically restarts.

## Bypass Mode

In the event of a UPS overload or internal failure, the UPS transfers your equipment to utility power. Battery mode is not available; however, the utility power continues to be passively filtered by the UPS. The indicator illuminates. The UPS transfers to Bypass mode when:

- The user activates Bypass mode through the front panel.
- The UPS detects the electronics module or a battery being replaced.
- The UPS has an overtemperature condition.
- The UPS has an overload condition of 110 to 130% for 60 seconds, 130 to 150% for 1 second, or greater than 150% for 100 ms.

If an overload condition is corrected, the UPS returns to Normal mode. However, if an overload condition occurs three times within 20 minutes, the UPS will lock on Bypass for one hour.

## Standby Mode

When the UPS is turned off and remains plugged into a power outlet, the UPS is in Standby mode. The indicator flashes slowly, indicating that power is not available to your equipment. The battery recharges when necessary.

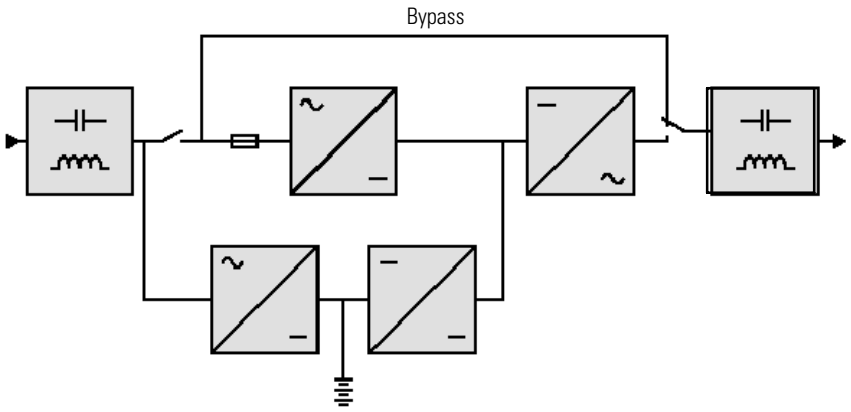


**Figure 37. Internal Circuit Configuration**

## UPS Startup and Shutdown

**WARNING**

Only qualified service personnel (such as a licensed electrician) should perform the UPS installation and initial startup. Risk of electrical shock.

Verify that UPS installation has been carried out correctly and the UPS ground has been connected.

### Normal Mode Startup

***NOTE*** *If the UPS detects that utility power is unavailable or out of range, and the DC Start user setting is enabled, the UPS will automatically start up on battery.*

To start up the UPS with utility power connected:

1. Turn off all protected equipment before starting up the UPS.
2. Switch on utility power where the UPS is connected.
3. Wait for the front panel LCD to illuminate.

   The LCD displays the startup screen for five seconds, then displays the system status screen. The fans run. The indicator flashes quickly then slowly, indicating that the UPS has entered Standby mode.
4. Switch all output circuit breakers to the ON ( | ) position.
5. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO ONLINE, and OK to confirm.

   The LCD displays a confirmation message and the indicator illuminates solid. The UPS is now in Normal mode and supplying power to your equipment.

   If the indicator is flashing, check the UPS status from the front panel to view the active alarms. Correct the alarms and restart if necessary.
6. Turn on the protected equipment.

## Starting the UPS on Battery

***NOTE*** *Before using this feature, the UPS must have been powered by utility power at least once.*

To start the UPS on battery without utility power connected:

1. Turn off all protected equipment before starting up the UPS.
2. Switch all output circuit breakers to the ON ( | ) position.
3. Press any button on the front panel display to activate the screen.
4. Wait for the front panel LCD to illuminate.

   The LCD displays the startup screen for five seconds, then displays the system status screen. The fans run. The indicator flashes quickly then slowly, indicating that the UPS has entered Standby mode.
5. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO BATTERY, and OK to confirm.

   The LCD displays a confirmation message and the indicator illuminates solid. The UPS is now in Battery mode and supplying battery power to your equipment.

   If the indicator is flashing, check the UPS status from the front panel to view the active alarms. Correct the alarms and restart if necessary.
6. Turn on the protected equipment.

## Internal Bypass Startup

To start up the UPS in internal Bypass mode with utility power connected:

1. Turn off all protected equipment before starting up the UPS.
2. Switch on utility power where the UPS is connected.

3. Wait for the front panel LCD to illuminate.

   The LCD displays the startup screen for five seconds, then displays the system status screen. The fans run. The indicator flashes quickly then slowly, indicating that the UPS has entered Standby mode.

4. Switch all output circuit breakers to the ON ( | ) position.

5. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO BYPASS, and OK to confirm.

   The LCD displays a confirmation message, the indicator illuminates solid, the indicator flashes, and the alarm sounds, indicating the UPS is operating in Bypass mode. The load is now powered by utility power.

   (Optional) Press the **ESC** button to silence the alarm.

6. Turn on the protected equipment.

## UPS Shutdown

To shut down the UPS:

1. Turn off or remove all protected equipment before turning off or shutting down the UPS.

2. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, and UPS TO OFF or UPS TO SHUTDOWN.

3. Confirm the selection by pressing and holding the button for three seconds to select OK.

   The LCD displays a confirmation message and all indicators flash slowly, indicating that the UPS is powering down and no longer supporting the load.

   The UPS disconnects from the batteries and transfers to Bypass mode.

4. To completely remove all output voltage, unplug or remove utility power from the UPS.

## Configuring the UPS for EBMs

To ensure maximum battery runtime, configure the UPS for the correct number of EBMs:

1. Select MENU from the system status screen, then select SETUP, USER SETUP, and BATTERY PACK.
2. Use the ▲ or ▼ button to select the number of battery packs in your UPS configuration:

| All UPS and EBM Cabinets | Number of Battery Packs |
|---|---|
| UPS + 1 EBM | 2 |
| UPS + 2 EBMs | 3 |
| UPS + 3 EBMs | 4 |
| UPS + 4 EBMs | 5 |

3. Press the ↵ button to save the setting.
4. Press the **ESC** button until the system status screen appears.

## Initiating the Battery Test

***NOTE*** *The batteries must be fully charged and the UPS must not be in Battery mode to perform the battery test.*

***NOTE*** *For an accurate battery test, test the UPS with at least 10% load applied to the UPS.*

You can configure the battery test settings, initiate a test, cancel a test, and view the test report.

**Configuring the Battery Test**. The UPS automatically performs a battery test every 7 to 90 days (user selectable) if this option is enabled. To enable or disable the automatic battery test and to select the test frequency and length, select MENU from the system status screen, then select SETUP, USER SETUP, and BATTERY TEST. Select to enable or disable the automatic test, choose a test period (7 to 90 days), and choose the test time (1 to 99 minutes).

**Initiating a Battery Test**. To initiate a manual battery test, select MENU from the system status screen, then select CONTROL, BATTERY TEST, and SCHEDULE TEST. The UPS verifies the battery converter and schedules the battery test to occur during the next appropriate stage in the charging cycle (or immediately if possible). During the battery test, the indicator flashes rapidly.

**Canceling a Battery Test**. To cancel a test already scheduled, select MENU from the system status screen, then select CONTROL, BATTERY TEST, and CANCEL TEST.

**Viewing the Battery Test Report**. To view a report of the latest battery test, select MENU from the system status screen, then select CONTROL, BATTERY TEST, and TEST REPORT.

## Transferring the UPS Between Modes

**From Normal to Bypass Mode**. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO BYPASS, and OK to confirm.

**From Bypass to Normal Mode**. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO ONLINE, and OK to confirm.

**From Standby to Bypass Mode**. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO BYPASS, and OK to confirm.

**From Bypass to Standby Mode**. Select MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, and UPS TO OFF. Confirm the selection by pressing and holding the ↵ button for three seconds to select OK.

# Chapter 5 Communication

The Powerware 9140 UPS is equipped with a USB port, a REPO port, two DB-9 communication ports, and an X-Slot communication bay (see Figure 38). Two parallel ports are available for future use.

Either the USB port or the RS-232 DB-9 communication port may be used to monitor the UPS; however, they cannot operate simultaneously. The service DB-9 port is used only to upgrade the firmware.

The X-Slot communication bay can accommodate any Powerware X-Slot card and can operate simultaneously with the USB port or RS-232 communication port.

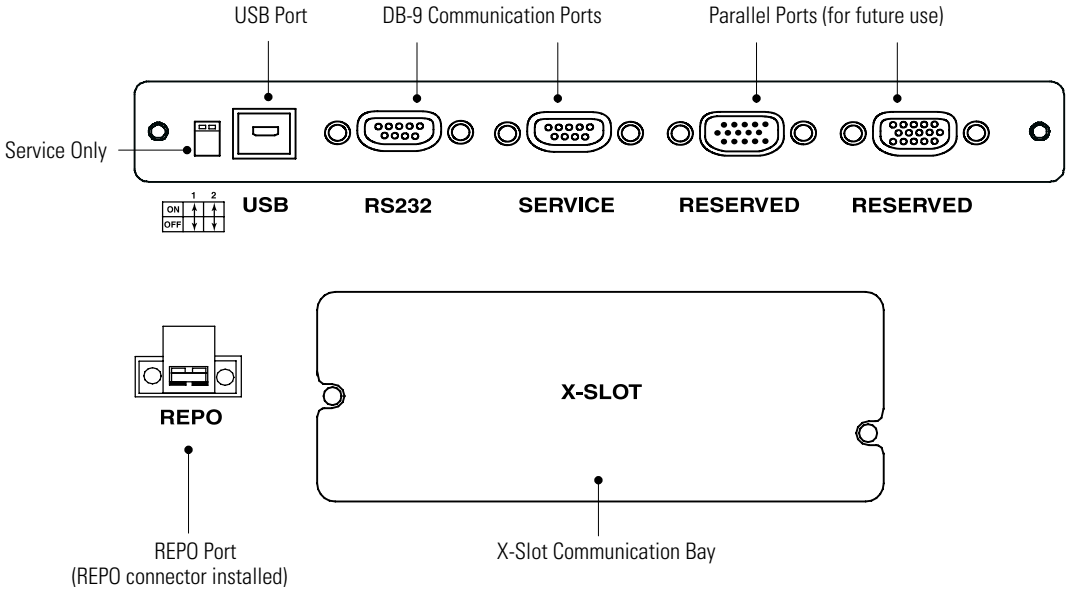


**Figure 38. Communication Options**

## USB Port

The UPS can communicate with a USB-compliant computer using Powerware LanSafe® Power Management Software or other HID-compliant power management software compatible with Microsoft® Windows® 2000 and XP operating systems that support HID devices.

***NOTE*** *The latest versions of the Powerware LanSafe software and the USB firmware are available at www.powerware.com.*

To establish communication between the UPS and a computer:

1. The USB port is hot-pluggable. Connect the USB cable to the USB port on the UPS rear panel (see Figure 38).

   Connect the other end of the USB cable to the USB port on your computer.

2. Install the Powerware LanSafe software and USB drivers according to the instructions provided with the Software Suite CD.

## Remote Emergency Power-off and Remote On/Off

The Powerware 9140 includes a two-position terminal that can be either left open or configured one of two ways:

- **As a remote emergency power-off (REPO) contact** that allows power to be switched off at the UPS output from a customer-supplied switch in a remote location.

  The REPO feature shuts down the protected equipment immediately and does not follow the orderly shutdown procedure initiated by any power management software. Any devices that are operating on battery power are also shut down immediately. The UPS transfers to Standby mode, and the Control menu options are unavailable. This feature can be used for shutting down the load and the UPS by thermal relay, for instance in the event of room overtemperature.

  When REPO is activated, the UPS shuts down all converters, de-energizes all system relays, and fully powers down the load immediately. If the utility breaker is also tripped, the UPS fully powers down within 10-15 seconds.

  When the REPO switch is reset, the equipment will not return to battery power until the UPS is manually restarted.

- **As a remote on/off (ROO) contact** that allows the UPS to be turned on and off from a customer-supplied switch in a remote location.

  If the ROO function is installed, turning the UPS on and off from the front panel is NOT available. If the UPS is in manual Bypass mode, turning the UPS on through the front panel transfers the UPS to Normal mode.

Two REPO/ROO positions may be used: normally-open or normally-closed. The pins on the normally-open REPO connector are not connected together. When this connection is closed:

- For REPO, the logic circuitry completely shuts down the UPS, thus preventing the power from supplying the load.
- For ROO, a remote on signal energizes the load, and opening the connection sends a remote off signal that de-energizes the load.

***NOTE*** *To restart the UPS, reconnect the REPO connector pins and turn on the UPS manually. The pins must be shorted (maximum resistance 1000 ohms) to keep the UPS running.*

***NOTE*** *Disconnect the load when changing the active state of the ROO contact. The load will energize or de-energize as soon as the state is changed, depending on whether there is a jumper installed.*

**CAUTION**

- The REPO must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The REPO switch must have a minimum rating of 24 Vdc and 20 mA.
- To ensure the UPS stops supplying power to the load during any mode of operation, the input power must be disconnected from the UPS when the emergency power-off function is activated.
- When REPO is activated for a UPS with line-to-line 208V input, the output receptacles will have 120V neutral (L2) to ground.

| REPO/ROO Connections | | | |
|---|---|---|---|
| **Wire Function** | | **Terminal Wire Size Rating** | **Suggested Wire Size** |
| REPO/ROO | L1 | 0.82–0.33 $mm^2$ (18–22 AWG) | 0.82 $mm^2$ (18 AWG) |
| | L2 | | |

## DB-9 Communication Ports

The Powerware 9140 provides two DB-9 ports on the UPS rear panel. The service port is not intended for customer use and does not support standard communication protocols. The RS-232 port is available for UPS monitoring, control, and flash upgrades.

To establish communication between the UPS and a computer, connect your computer to the RS-232 UPS communication port using the supplied serial communication cable (see Figure 38 on page 69).

When the communication cable is installed, power management software can exchange data with the UPS. The software polls the UPS for detailed information on the status of the power environment. If a power emergency occurs, the software initiates the saving of all data and an orderly shutdown of the equipment.

The cable pins are identified in Figure 39 and the pin functions are described in Table 6.

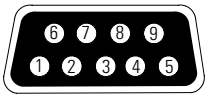


**Figure 39. Communication Port**

**Table 6. Communication Port Pin Assignment**

| Pin Number | Signal Name | Function | Direction from the UPS |
|---|---|---|---|
| 1 | Low Batt | Low Battery relay contact; 20 mA, 30 Vdc contact rating | Out |
| 2 | TxD | Transmit to external device | Out |
| 3 | RxD | Receive from external device | In |
| 4 | DTR | PnP (Plug and Play) from external device (tied to Pin 6) | In |
| 5 | GND | Signal common (tied to chassis) | — |
| 6 | DSR | To external device (tied to Pin 4) | Out |
| 7 | — | No Connection | — |
| 8 | AC Fail | AC Fail relay contact; 20 mA, 30 Vdc contact rating | Out |
| 9 | Power Source | +V (8 to 24 volts DC power) | Out |

## X-Slot Cards

X-Slot cards allow the UPS to communicate in a variety of networking environments and with different types of devices. The Powerware 9140 has an available communication bay for one of the following X-Slot cards:

- ConnectUPS™-X Web/SNMP Card - has SNMP and HTTP capabilities as well as monitoring through a Web browser interface; connects to a twisted-pair Ethernet (10/100BaseT) network. It has a built-in switching hub that allows three additional network devices to be connected to the network without the requirement of additional network drops. In addition, a Powerware Environmental Monitoring Probe can be attached to obtain humidity, temperature, smoke alarm, and security information.
- Relay Interface Card - has isolated dry contact (Form-C) relay outputs for UPS status: Utility failure, Low battery, UPS alarm/OK, or On bypass.
- Modbus® Card - allows you to continuously and reliably monitor the UPSs in your Building Management System (BMS).
- Multi-Server Card - has six serial communication ports that can communicate simultaneously with other computers using Powerware LanSafe Power Management Software (provided on the Software Suite CD).
- Single-Port Card - connects to the Powerware Expansion Chassis to enable multiple communication options or to a PC for power management control.

See Figure 38 on page 69 for the location of the X-Slot communication bay.

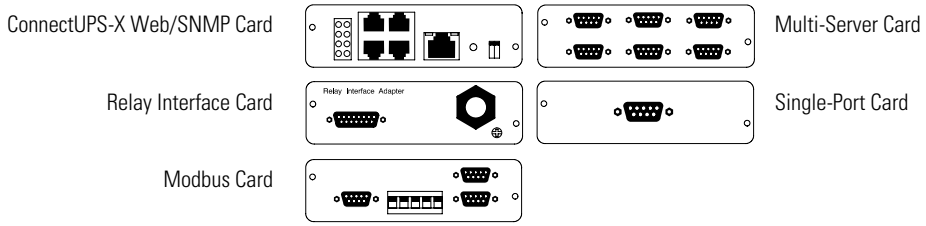


**Figure 40. Optional X-Slot Cards**

## Powerware LanSafe Power Management Software

Each Powerware 9140 UPS ships with Powerware LanSafe Power Management Software. To begin installing Powerware LanSafe software, see the instructions accompanying the Software Suite CD.

***NOTE*** *When installing Powerware LanSafe software, select serial port installation. For the UPS manufacturer and model, select* ***Powerware*** *and* ***Powerware 9140****. If the Powerware brand options are not available in your version of the software, select* ***Generic UPSs*** *for the manufacturer and* ***Generic XCP*** *for the model.*

Powerware LanSafe software provides up-to-date graphics of UPS power and system data and power flow. It also gives you a complete record of critical power events, and it notifies you of important UPS or power information. If there is a power outage and the Powerware 9140 UPS battery power becomes low, Powerware LanSafe software can automatically shut down your computer system to protect your data before the UPS shutdown occurs.

# Chapter 6 UPS Maintenance

This section explains how to:

- Care for the UPS and batteries
- Replace the UPS and EBM batteries
- Test new batteries
- Replace the electronics module
- Recycle used batteries or UPS

## UPS and Battery Care

For the best preventive maintenance, keep the area around the UPS clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner.

For full battery life, keep the UPS at an ambient temperature of 25°C (77°F).

***NOTE*** *The batteries in the UPS are rated for a 3–5 year service life. The length of service life varies, depending on the frequency of usage and ambient temperature. Batteries used beyond expected service life will often have severely reduced runtimes. Replace batteries at least every 5 years to keep units running at peak efficiency.*

## Storing the UPS and Batteries

If you store the UPS for a long period, recharge the battery every 6 months by connecting the UPS to utility power. The batteries charge to 80% capacity in less than 5 hours. However, it is recommended that the batteries charge for 48 hours after long-term storage.

Check the battery recharge date on the shipping carton label. If the date has expired and the batteries were never recharged, do not use the UPS. Contact your service representative.

## When to Replace Batteries

When the indicator flashes slowly and the audible alarm beeps intermittently, the batteries may need replacing. Contact your service representative to order new batteries.

## Replacing Batteries

***NOTE*** *DO NOT DISCONNECT the batteries while the UPS is in Battery mode.*

Batteries can be replaced easily without turning the UPS off or disconnecting the load.

If you prefer to remove input power to change the batteries, see "UPS Shutdown" on page 66.

Consider all warnings, cautions, and notes before replacing batteries.

**WARNING**

- Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.
- Batteries can present a risk of electrical shock or burn from high short circuit current. The following precautions should be observed: 1) Remove watches, rings, or other metal objects; 2) Use tools with insulated handles; 3) Do not lay tools or metal parts on top of batteries; 4) Disconnect charging source prior to connecting or disconnecting battery terminals; 5) Wear rubber gloves and boots.
- When replacing batteries, replace with the same type and number of batteries or battery packs. Contact your service representative to order new batteries.
- Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Never dispose of batteries in a fire. Batteries may explode when exposed to flame.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes and may be extremely toxic.
- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).
- ELECTRIC ENERGY HAZARD. Do not attempt to alter any battery wiring or connectors. Attempting to alter wiring can cause injury.

## How to Replace EBM Batteries

To replace the EBM batteries:

1. Switch all battery circuit breakers to the OFF (O) position (see Figure 26 on page 41).
2. Remove the cable retention clip and screws and unplug the EBM cable from the UPS.

   If additional EBMs are installed, remove the cable retention clip and screws and unplug the EBM cable from the battery connector on each EBM.
3. Remove the EBM front cover (see Figure 41).

   To remove the front cover, loosen the two front cover screws. Grasp the fingergrips on both sides of the cover and pull the cover forward firmly.

**CAUTION**

Pull the battery trays out onto a flat, stable surface. The battery trays are unsupported when you pull them out of the EBM.

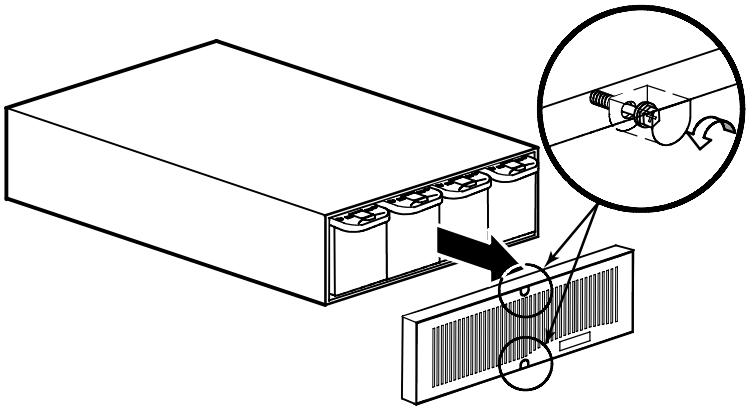

**Figure 41. Removing the EBM Front Cover**

4. Push down and hold the battery tray lock to unlock the tray. Pull the battery tray slowly out onto a flat, stable surface; use two hands to support the tray.

   Repeat for each battery tray in the cabinet. See "Recycling the Used Battery or UPS" on page 84 for proper disposal.

5. Slide the new battery trays into the EBM cabinet (see Figure 42). Push each tray in until the battery tray lock on the handle catches to lock the tray in place.

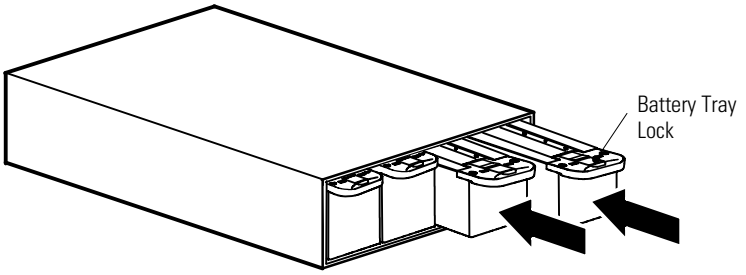


**Figure 42. Installing the Battery Trays**

6. Replace the EBM front cover (see Figure 43) and tighten the two front cover screws.

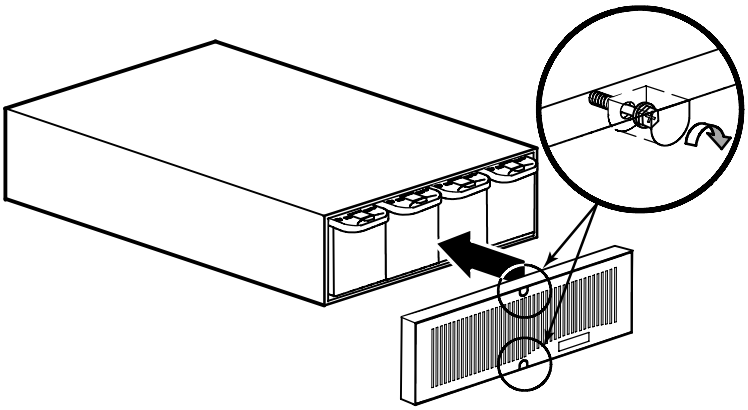

**Figure 43. Replacing the EBM Front Cover**

7. Repeat Steps 3 through 6 for each EBM.
8. Plug the EBM into the UPS as shown in Figure 26 on page 41.

   For additional EBMs, plug the EBM cable into the battery connector on the adjacent EBM.
9. Reinstall the cable retention clip(s) and screws to hold the EBM cable(s) firmly in place.
10. Switch all battery circuit breakers to the ON ( | ) position.

## How to Replace UPS Internal Batteries

To replace the UPS internal batteries:

1. Remove the UPS front cover (see Figure 44).

   To remove the front cover, loosen the two front cover screws. Grasp the fingergrips on both sides of the cover and pull the cover forward firmly.

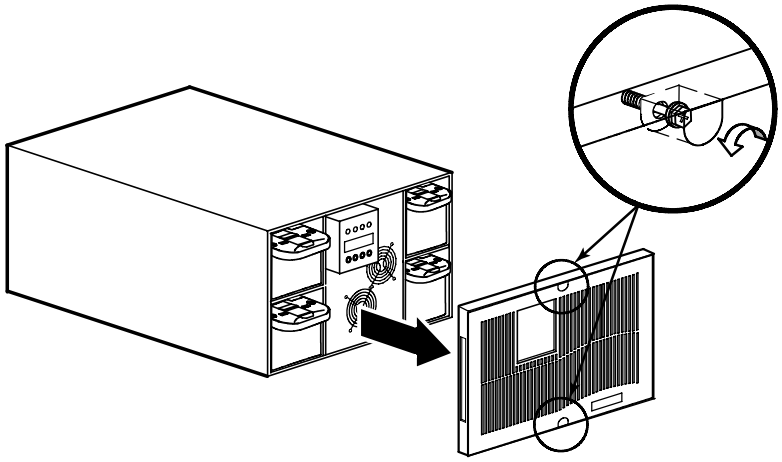

**Figure 44. Removing the UPS Front Cover**

**CAUTION**

Pull the battery trays out onto a flat, stable surface. The battery trays are unsupported when you pull them out of the UPS.

2. Push down and hold a battery tray lock to unlock a tray. Pull the battery tray slowly out onto a flat, stable surface; use two hands to support the tray. See Figure 45.

   The UPS display indicates within 5–60 seconds that a battery is disconnected. However, if an optional EBM is installed, the display does not indicate a disconnected battery.

   Repeat for each battery tray. See "Recycling the Used Battery or UPS" on page 84 for proper disposal.

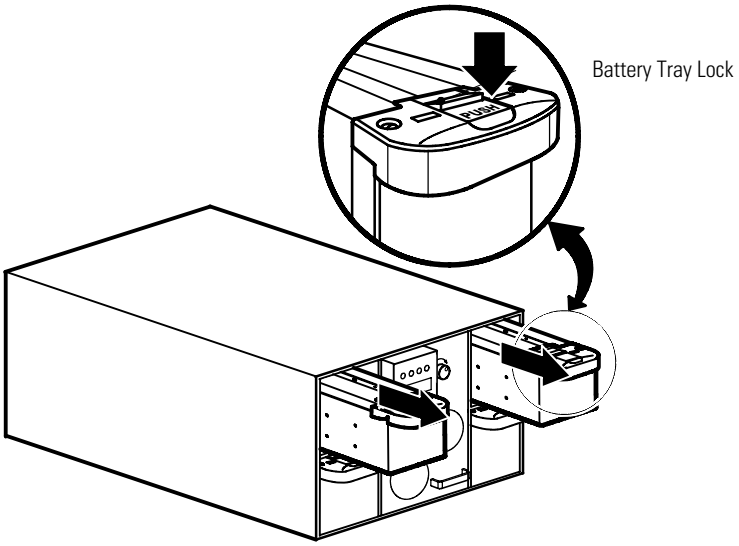


**Figure 45. Removing the Battery Trays**

3. Slide the new battery trays into the cabinet. Push each tray in until the battery tray lock on the handle catches to lock the tray in place.

4. Replace the UPS front cover and tighten the two front cover screws.

## Testing New Batteries

***NOTE*** *The batteries must be fully charged and the UPS must not be in Battery mode to perform the battery test.*

***NOTE*** *For an accurate battery test, test the UPS with at least 10% load applied to the UPS.*

To test the new batteries:

1. Plug the UPS into a power outlet (apply utility power on hardwired models) for 48 hours to charge the battery.
2. After charging the battery, select MENU from the system status screen, then select CONTROL, BATTERY TEST, and SCHEDULE TEST.

   The UPS verifies the battery converter and schedules the battery test to occur during the next appropriate stage in the charging cycle (or immediately if possible).

   During the battery test, the Battery LED (yellow) flashes rapidly.
3. To view a report of the latest scheduled battery test, select MENU from the system status screen, then select CONTROL, BATTERY TEST, and TEST REPORT.

## Replacing the Electronics Module

Consider all warnings and notes before replacing the electronics module.

The electronics module can be replaced easily without turning the UPS off or disconnecting the load. The UPS automatically transfers to Bypass mode. Battery mode is not available; however, the utility power continues to be passively filtered by the UPS.

If you prefer to remove input power to change the electronics module, see "UPS Shutdown" on page 66.

**WARNING**

- Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.
- ELECTRIC ENERGY HAZARD. Do not attempt to alter any battery or electronics module wiring or connectors. Attempting to alter wiring can cause injury.

***NOTE*** *DO NOT DISCONNECT the electronics module while the UPS is in Battery mode.*

To replace the electronics module:

1. Remove the UPS front cover (see Figure 46).

   To remove the front cover, loosen the two front cover screws. Grasp the fingergrips on both sides of the cover and pull the cover forward firmly.

2. Turn the module lock switch to the UNLOCK position. The UPS transfers to Bypass mode.

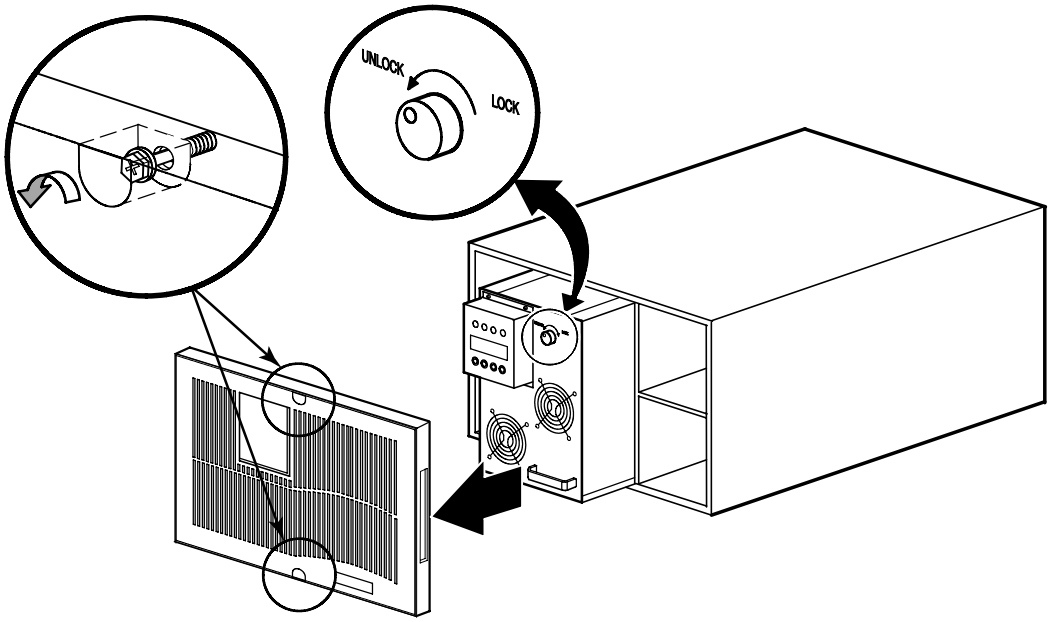


**Figure 46. Removing the Electronics Module**

3. Grasp the handle at the base of the electronics module and pull the module slowly out of the cabinet. Use two hands to support the module out onto a flat, stable surface.

4. Treat the original and replacement modules with care to avoid damaging connectors or internal circuitry. Label the original module with masking tape or some other identifier. Record the serial number of the replacement module for your warranty.

   If not returning the electronics module for warranty, see the following section, "Recycling the Used Battery or UPS," for proper disposal.

5. Insert the replacement module by sliding it carefully into the cabinet. Verify that it seats firmly against the rear of the cabinet.

6. Turn the module lock switch to the LOCK position. The UPS automatically returns to Normal mode.

7. Replace the UPS front cover and tighten the two front cover screws.

## Recycling the Used Battery or UPS

Contact your local recycling or hazardous waste center for information on proper disposal of the used battery or UPS.

**WARNING**

- Do not dispose of the battery or batteries in a fire. Batteries may explode. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

**CAUTION**

Do not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

**CAUTION**

Do not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

# Chapter 7 Specifications

This section provides the following specifications:

- Model list
- Weights and dimensions
- Electrical input and output
- Environmental and safety
- Battery

**Table 7. Model List**

| UPS Model Number | Power Levels (Rated at Nominal Inputs) |
|---|---|
| PW9140 10000 | 10 kVA, 8 kW* |
| PW9140 10000 HW | |
| PW9140 7500 | 7.5 kVA, 6 kW |
| PW9140 7500 HW | |
| **EBM Model Number** | |
| PW9140 192V EBM | |

* 9 kVA, 7.2 kW (derated at 200V input)

**Table 8. Weights and Dimensions**

| | UPS | Extended Battery Module (EBM) |
|---|---|---|
| **Dimensions (WxDxH)** | 43.0 x 76.0 x 26.2 cm<br>16.9" x 29.9" x 10.3" (6U) | 43.0 x 66.0 x 13.1 cm<br>16.9" x 26.0" x 5.2" (3U) |
| **Weights** | Plug-Receptacle Chassis: 42 kg (92 lb)<br>Hardwired Chassis: 39 kg (86 lb)<br>(4) Internal Battery Trays: 17 kg (37 lb) each<br><br>Total Plug-Receptacle UPS Weight: 110 kg (240 lb)<br>Total Hardwired UPS Weight: 107 kg (234 lb) | EBM Chassis: 14 kg (31 lb)<br>(4) Internal Battery Trays: 17 kg (37 lb)<br><br>Total EBM Weight: 82 kg (179 lb) |

**Table 9. Electrical Input**

| | |
|---|---|
| **Nominal Voltage** | 200/208/220/230/240V auto-sensing |
| **Voltage Range** | 160–253V, 174–288V |
| **Nominal Frequency** | 50/60 Hz auto-sensing |
| **Frequency Range** | 45–65 Hz |
| **Default Frequency** | 60 Hz (50 Hz for hardwired model, 220–240V) |
| **Maximum Input Current at Nominal Utility Voltage** | 48A<br>(not applicable for hardwired models) |
| **Noise Filtering** | MOVs and line filter for normal and common mode noise |
| **Connections** | 3-meter IEC 309-60A power cord or hardwired |
| **Input Power Factor** | >0.99 |
| **Input Mode** | Single-phase or three-phase (three-phase option on hardwired models only) |

**Table 10. Electrical Output**

| | | |
|---|---|---|
| **Regulation** | Nominal output voltage ±2% Static, ±10% Dynamic | |
| **Nominal Outputs** | 200/208/220/230/240V<br>(voltage configurable or auto-sensing)<br>45/48/45/43/41A<br>9/10/10/10/10 kVA<br>7.2/8/8/8/8 kW | |
| **Output Overload** | 110–130%: load transfers to Bypass mode after 1 minute<br>130–150%: load transfers to Bypass mode after 1 second<br>>150%: load transfers to Bypass mode after 1 ms | |
| **Voltage Waveform** | Normal mode: Sine wave; <3% THD with linear load;<br><5% with nonlinear load | |
| **Output Receptacles** | Plug-Receptacle Models:<br>(4) C19,<br>each with 20A circuit breaker | Hardwired Models:<br>(3) C19 and (1) dual C13,<br>each with 20A circuit breaker |
| **Full Output** | IEC 309-60A | Hardwired |

**Table 11. Environmental and Safety**

| | |
|---|---|
| **Operating Temperature** | 0°C to 40°C (32°F to 104°F)<br>Optimal battery performance: 25°C (77°F) |
| **Storage Temperature** | -20°C to 50°C (-4°F to 122°F) |
| **Transit Temperature** | -20°C to 50°C (-4°F to 122°F) |
| **Relative Humidity** | 0–95% noncondensing |
| **Operating Altitude** | Up to 3,000 meters above sea level |
| **Transit Altitude** | Up to 15,000 meters above sea level |
| **Heat Dissipation** | 2066 BTU/hr maximum |
| **Audible Noise** | Less than 55 dBA at 5 feet with battery fully charged, without horn |
| **Leakage Current** | < 3.5 mA |
| **Communication** | DB-9: 1200-19200 baud; USB 1.1 compliant |
| **Surge Suppression** | ANSI C62.41 Category B3 |
| **Safety Conformance** | UL 1778; CSA C22.2, No. 107.3;<br>EN and IEC 62040-2; NOM-019-SCFI-1993;<br>EN and IEC 62040-1-1 (Hardwired models only);<br>EN and IEC 60950-1 (Hardwired models only) |
| **Agency Markings** | cULus, cUL, NOM<br>Hardwired models only: TÜV/VDE, CE |
| **EMC (Class A)** | EN 50091-2, FCC Part 15, ICES-003 |
| **Seismic** | Uniform Building Code (UBC) and Bellcore for Zone 4 Earthquake |

**Table 12. Battery**

| | UPS Internal Batteries | +1 EBM | +2 EBMs | +3 EBMs | +4 EBMs |
|---|---|---|---|---|---|
| Type | Sealed, maintenance-free, valve-regulated, lead-acid | | | | |
| Monitoring | Advanced monitoring for earlier failure detection and warning | | | | |
| Configuration | (32) 12V, 5 Ah | | | | |
| Charging (in minutes) (10 kVA models) | 266 | 336 | 368 | 398 | 419 |
| Charging (in minutes) (7.5 kVA models) | 215 | 367 | 390 | 416 | 440 |

**NOTE** Charging times are approximate and are to 80% usable capacity at nominal line voltage after full load discharge.

**Table 13. Battery Runtimes (in Minutes)**

| Load (10 kVA Models) | UPS Internal Batteries | +1 EBM | +2 EBMs | +3 EBMs | +4 EBMs |
|---|---|---|---|---|---|
| 100% Load | 5 | 12 | 27 | 35 | 45 |
| 75% Load | 7 | 17 | 35 | 46 | 60 |
| 50% Load | 12 | 27 | 52 | 69 | 90 |
| 25% Load | 31 | 61 | 99 | 138 | 181 |
| **Load (7.5 kVA Models)** | **UPS Internal Batteries** | **+1 EBM** | **+2 EBMs** | **+3 EBMs** | **+4 EBMs** |
| 100% Load | 8.5 | 23.5 | 37.5 | 53 | 65.5 |
| 75% Load | 12 | 30 | 52 | 69 | 86.5 |
| 50% Load | 22 | 51.5 | 78.5 | 98.5 | 111 |
| 25% Load | 48 | 94 | 116 | >120 | >180 |

**NOTE** Battery times are approximate and vary depending on the load configuration and battery charge.

# Chapter 8 Troubleshooting

The Powerware 9140 is designed for durable, automatic operation and also alerts you whenever potential operating problems may occur. Usually the alarms shown by the control panel do not mean that the output power is affected. Instead, they are preventive alarms intended to alert the user. Use the following troubleshooting chart to determine the UPS alarm condition.

## Typical Alarms and Conditions

The following table describes typical alarms and conditions; check the Alarm History through the front panel for a list of active alarms. If an alarm appears with a service code, please contact the Help Desk (see page 92).

| Alarm or Condition | Possible Cause | Action |
|---|---|---|
| On Battery<br> <br>LED is on.<br>1 short beep every 5 seconds. | A utility failure has occurred and the UPS is in Battery mode. | The UPS is powering the equipment with battery power. Prepare your equipment for shutdown. |
| Battery Low<br> <br>LED is flashing slowly.<br>Continuous beep. | The UPS is in Battery mode and the battery is running low. | This warning is approximate, and the actual time to shutdown may vary significantly. Depending on the UPS load and number of Extended Battery Modules (EBMs), the Battery Low warning may occur before the batteries reach 25% capacity. See Table 13 on page 88 for estimated runtimes.<br>When utility power is restored, the UPS restarts automatically, provides power to the load, and charges the battery. |
| Battery Test<br> <br>LED is flashing quickly.<br>1 long beep every 5 seconds. | A battery test is in progress. | Wait until the battery test completes. |

| Alarm or Condition | Possible Cause | Action |
|---|---|---|
| On Bypass LED is on. 1 long beep every 5 seconds. | The UPS is in Bypass mode. | The equipment transferred to bypass utility power. Battery mode is not available; however, the utility power continues to be passively filtered by the UPS. Check for one of the following alarms: overtemperature, overload, UPS failure, hot swap, or remote emergency power-off (REPO). |
| Bypass Unavailable LED is flashing slowly. 1 long beep every 5 seconds. | Bypass is not available because the bypass input utility is outside the configured bypass range. | Check the bypass utility. The UPS is receiving bypass utility power that may be unstable or in brownout conditions. The UPS continues to supply power to your equipment. Check for one of the following alarms: bypass over or under voltage, bypass over or under frequency, or bypass unavailable. |
| Battery Connection LED is on. 1 long beep every 5 seconds. | The UPS does not recognize the internal batteries. | If the condition persists, contact your service representative. |
| | A battery tray is disconnected. | Verify that all battery trays are fully seated and locked in place. If the condition persists, contact your service representative. |
| Overload LED is on. 1 long beep every 5 seconds. | Power requirements exceed the UPS capacity (greater than 100% of nominal; see page 86 for specific output overload ranges). | Remove some of the equipment from the UPS. The UPS continues to operate, but may switch to Bypass mode if the load increases. The alarm resets when the condition becomes inactive. |
| Overtemperature LED is on. 1 long beep every 5 seconds. | The UPS internal temperature is too high or a fan has failed. | Shut down the UPS. Clear vents and remove any heat sources. Allow the UPS to cool. Ensure the airflow around the UPS is not restricted. Restart the UPS. If the condition persists, contact your service representative. |
| Site Wiring Fault LED is on. 1 long beep every 5 seconds. | Ground wire connection does not exist, or the line and neutral wires are reversed in the wall outlet. | Have a qualified electrician correct the wiring. |
| The UPS does not provide the expected backup time. | The batteries need charging or service. | Apply utility power for 48 hours to charge the batteries. If the condition persists, contact your service representative. |
| Power is not available at the UPS output receptacles. | The UPS is in Standby mode. | Supply power to the connected equipment: Turn the UPS on by selecting MENU from the system status screen, then select CONTROL, OUTPUT CONTROL, UPS TO ONLINE, and OK to confirm. |

| Alarm or Condition | Possible Cause | Action |
|---|---|---|
| The UPS does not start. | The main utility breaker is off. | Verify that the main utility breaker is on. |
| | The power cord is not connected correctly (plug-receptacle models). | Check the power cord connections. |
| | The batteries or electronics module is being replaced. | Complete the replacement procedure before starting the UPS. |
| | The REPO switch is active or the REPO connector is missing. | Reset the REPO switch and restart the UPS. Verify that the REPO connector is present. |
| The UPS does not turn off. | The batteries or electronics module is being replaced. | Complete the replacement procedure before shutting down the UPS. |
| The UPS operates normally, but some or all of the protected equipment is not on. | The equipment is not connected to the UPS correctly. | Verify that the equipment is plugged into the UPS receptacles. For hardwired models, contact a qualified electrician to check connections to the power source. |
| | Circuit breakers for UPS receptacles are in the OFF position. | Switch UPS receptacle circuit breakers to the ON position. |
| | UPS receptacles have been turned off by power management software or a communication card. | Modify the settings in the power management software or the communication card (refer to the individual user's guide). |
| Battery test failed. | The batteries need service. | Contact your service representative. |
| Battery test did not run. | Load was less than 10% of rated capacity when the battery test started. Battery test report shows CANCELLED, then changes to TEST SCHED during the next appropriate stage in the charging cycle. | The UPS automatically reschedules the battery test. |
| | User cancelled the battery test through the front panel. Battery test report shows CANCELLED. | Reschedule the battery test if necessary. |
| The UPS does not transfer to Bypass mode. | No input is available to the bypass input terminal block. | Check the bypass input terminal block wiring. Connect an input to the bypass input terminal block. |
| | The bypass utility does not qualify. | Check the bypass utility. The UPS is receiving bypass utility power that may be unstable or in brownout conditions. |
| | Bypass mode is disabled. | Check that the Allow Bypass user setting is Enabled (see page 60). |

## Silencing the Alarm

Before silencing an alarm, check the alarm condition and perform the applicable action to resolve the condition.

Press any button on the front panel display to silence the alarm. If the alarm status changes, the alarm beeps again, overriding the previous alarm silencing.

## Service and Support

If you have any questions or problems with the UPS, call your **Local Distributor** or the **Help Desk** at one of the following telephone numbers and ask for a UPS technical representative.

| | |
|---|---|
| United States: | **1-800-356-5737** or **1-919-870-3149** |
| Canada: | **1-800-461-9166 ext 260** |
| All other countries: | **Call your local service representative** |

Please have the following information ready when you call for service:

- Model number
- Serial number
- Firmware version number
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

If repair is required, you will be given a Returned Material Authorization (RMA) Number. This number must appear on the outside of the package and on the Bill Of Lading (if applicable). Use the original packaging or request packaging from the Help Desk or distributor. Units damaged in shipment as a result of improper packaging are not covered under warranty. A replacement or repair unit will be shipped, freight prepaid for all warrantied units.

***NOTE*** *For critical applications, immediate replacement may be available. Call the* ***Help Desk*** *for the dealer or distributor nearest you.*

# Chapter 9 Warranty

## Two-Year Limited Warranty (US and Canada)

### Powerware UPS Models: 3105, 3110, 3115, 9104, 9120, 9125, 9140, and FERRUPS® up to 3.1 kVA

**WARRANTOR:** The warrantor for the limited warranties set forth herein is Eaton Electrical Inc., a Delaware Corporation company ("Company").

**LIMITED WARRANTY:** This limited warranty (this "Warranty") applies only to the original End-User (the "End-User") of any Powerware 3105, 3110, 3115, 9104, 9120, 9125, 9140, and FERRUPS up to 3.1 kVA Products (individually and collectively, the "Product") purchased on or after June 1, 2004 and cannot be transferred. This Warranty applies even in the event that the Product is initially sold by Company for resale to an End-User.

**LIMITED WARRANTY PERIOD:** The period covered by this Warranty for Product installed [and currently located] in the fifty (50) United States, the District of Columbia, and Canada is twenty-four (24) months from the date of purchase.

**WHAT THIS LIMITED WARRANTY COVERS:** The warrantor warrants that the Product and battery (individually and collectively, the "Warranted Items") are free from defects in material and workmanship. If, in the opinion of Company, a Warranted Item is defective and the defect is within the terms of this Warranty, Company's sole obligation will be to repair or replace such defective Warranted Item (including by providing service, parts and labor, as applicable), at the option of Company.

**PROCEDURES FOR REPAIR OR REPLACEMENT OF WARRANTED ITEMS:** The Warranted Item will be repaired or replaced at a Company site or such other location as determined by Company.

If the Warranted Item is to be replaced by Company, and the End-User supplies a credit card number or purchase order for the value of the replacement Product, Company will use commercially reasonable business efforts to ship (via standard ground shipment and at no cost to the End-User) the replacement Warranted Item to the End-User within one (1) business day after Company receives notice of the warranty claim. In such case, the End-User must return (at Company's expense) the defective Warranted Item to Company in the same packaging as the replacement Warranted Item received by the End-User or as otherwise instructed by Company. If Company does not receive the defective Warranted Item, Company will either charge the End-User's credit card, or send the End-User an invoice (which the End-User agrees to pay), for the value of the replacement Product.

If the Warranted Item is to be replaced by Company, but the End-User is unwilling or unable to supply a credit card number or purchase order for the value of the replacement Product, Company will use commercially reasonable business efforts to ship (via standard ground shipment and at no cost to the End-User) the replacement Warranted Item to the End-User within one (1) business day after Company receives the defective Product from the End-User.

In any case, Company will provide shipping instructions and will pay its designated carrier for all shipping charges for return of defective equipment and replacement of Warranted Items. Any returned Warranted Item or parts that are replaced may be new or reconditioned. All Warranted Items returned to Company and all parts replaced by Company shall become the property of Company.

**WHAT THIS LIMITED WARRANTY DOES NOT COVER:** This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the charge of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, abuse, misuse, misapplication, or incorrect installation; (d) repair or alteration not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; (e) improper testing, operation, maintenance, adjustment, or modification of any kind not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; or (f) use of the Product under other than normal operating conditions or in a manner inconsistent with the Product's labels or instructions.

This Warranty is not valid if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof.

Company shall not be responsible for any charges for testing, checking, removal or installation of Warranted Items.

**COMPANY DOES NOT WARRANT EQUIPMENT NOT MANUFACTURED BY COMPANY. IF PERMITTED BY THE APPLICABLE MANUFACTURER, COMPANY SHALL PASS THROUGH SUCH MANUFACTURER'S WARRANTIES TO END-USER.**

**COMPANY DOES NOT WARRANT SOFTWARE, INCLUDING SOFTWARE EMBEDDED IN PRODUCTS, THAT IS NOT CREATED BY COMPANY. WITHOUT LIMITING THE FOREGOING, COMPANY SPECIFICALLY DOES NOT WARRANT SOFTWARE (SUCH AS LINUX) THAT WAS CREATED USING AN "OPEN SOURCE" MODEL OR IS DISTRIBUTED PURSUANT TO AN OPEN SOURCE LICENSE.**

**THIS WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OFFERED BY COMPANY WITH RESPECT TO THE PRODUCTS AND SERVICES AND, EXCEPT FOR SUCH FOREGOING WARRANTY COMPANY DISCLAIMS ALL OTHER WARRANTIES INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTION OF NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE COMPANY'S SOLE LIABILITY AND END-USER'S EXCLUSIVE REMEDY FOR FAILURE OF COMPANY TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE END-USER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE.**

**LIMITATION OF LIABILITY:** The remedies of the End-User set forth herein are exclusive and are the sole remedies for any failure of Company to comply with its obligations hereunder. In no event shall Company be liable in contract, in tort (including negligence or strict liability) or otherwise for damage to property or equipment other than the Products, including loss of profits or revenue, loss of use of Products, loss of data, cost of capital, claims of customers of the End-User or any special, indirect, incidental or consequential damages whatsoever. The total cumulative liability of Company hereunder whether the claims are based in contract (including indemnity), in tort (including negligence or strict liability) or otherwise, shall not exceed the price of the Product on which such liability is based.

Company shall not be responsible for failure to provide service or parts due to causes beyond Company's reasonable control.

**END-USER'S OBLIGATIONS:** In order to receive the benefits of this Warranty, the End-User must use the Product in a normal way; follow the Product's user's guide; and protect against further damage to the Product if there is a covered defect.

**OTHER LIMITATIONS:** Company's obligations under this Warranty are expressly conditioned upon receipt by Company of all payments due to it (including interest charges, if any). During such time as Company has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Company shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

**COSTS NOT RELATED TO WARRANTY:** The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation, site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses or labor of Company representatives outside the terms of this Warranty will be borne by the End-User.

**OBTAINING WARRANTY SERVICE:** In the USA, call the Customer Reliability Center 7x24 at 800-356-5737. Outside of the USA, call your local Powerware product sales or service representative, or call the Customer Reliability Center in the USA at 919-870-3149. For comments or questions about this Warranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.

## Ten-Year Pro-Rated Limited Warranty (US and Canada)

### Powerware UPS Models: 5115, 5125, 5140, 9104, 9120, 9125, 9140, 9155, 9170+, and FERRUPS

**WARRANTOR:** The warrantor for the limited warranties set forth herein is Eaton Electrical Inc., a Delaware Corporation company ("Company").

**LIMITED WARRANTY:** This pro-rated limited warranty (this "Warranty") applies only to the original End-User (the "End-User") of any Powerware 5115, 5125, 5140, 9104, 9120, 9125, 9140, 9155, 9170+, and FERRUPS Products (individually and collectively, the "Product") and cannot be transferred. This Warranty applies even in the event that the Product is initially sold by Company for resale to an End-User.

**WHAT THIS WARRANTY COVERS:** In addition to the standard Two-Year Limited Warranty covering the applicable Product, the warrantor warrants that the Product will have a service life (defined below) of ten years from the date of purchase (the "Ten-Year Service Life") when used in accordance with the storage, handling, installation, operation and maintenance procedures prescribed in the Product's user's guide. "Service life" means the Product's ability to deliver at least 80% of its original rated backup time.

If Company finds, in its sole discretion, that any Product has not provided the Ten-Year Service Life, Company will, as its sole obligation and the End-User's sole remedy for Company's breach of this warranty, repair or replace the Product, at its option, F.O.B. Company's factory, for a charge, payable by the End-User to Company pro-rated on the following basis:

The End-User will be allowed a credit against Company's list price of equivalent equipment at the time of return of the Product to Company, in proportion to the percentage of Ten-Year Service Life remaining at the time of return of the Product to Company. In calculating the available credit, the remaining portion of the Ten-Year Service Life will be rounded up or down to the nearest whole year. The End-User will assume responsibility to pay the balance of the list price; and Company reserves the right to require payment prior to delivery of the repaired or replacement equipment.

For the avoidance of doubt, Company's responsibilities under this Warranty are as follows:

Years 1-2 - Product repaired or replaced pursuant to terms of Limited Warranty

Years 3-10 - Unit Credit ($) = Current List Price $\times$ $\frac{\text{Years of Unexpired Life}}{\text{10 Years of Warranted Life}}$

**WHAT THIS LIMITED WARRANTY DOES NOT COVER:** This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the charge of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, abuse, misuse, misapplication, or incorrect installation; (d) repair or alteration not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; (e) improper testing, operation, maintenance, adjustment, or modification of any kind not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; or (f) use of the Product under other than normal operating conditions or in a manner inconsistent with the Product's labels or instructions.

**This Warranty is not valid: (a) unless the End-User returns to Company the Warranty Registration Card within thirty (30) days of purchase; or (b) if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof.**

Company shall not be responsible for any charges for testing, checking, removal or installation of Warranted Items.

**COMPANY DOES NOT WARRANT EQUIPMENT NOT MANUFACTURED BY COMPANY. IF PERMITTED BY THE APPLICABLE MANUFACTURER, COMPANY SHALL PASS THROUGH SUCH MANUFACTURER'S WARRANTIES TO END-USER.**

**COMPANY DOES NOT WARRANT SOFTWARE, INCLUDING SOFTWARE EMBEDDED IN PRODUCTS, THAT IS NOT CREATED BY COMPANY. WITHOUT LIMITING THE FOREGOING, COMPANY SPECIFICALLY DOES NOT WARRANT SOFTWARE (SUCH AS LINUX) THAT WAS CREATED USING AN "OPEN SOURCE" MODEL OR IS DISTRIBUTED PURSUANT TO AN OPEN SOURCE LICENSE.**

**THIS WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OFFERED BY COMPANY WITH RESPECT TO THE PRODUCTS AND SERVICES AND, EXCEPT FOR SUCH FOREGOING WARRANTY COMPANY DISCLAIMS ALL OTHER WARRANTIES INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTION OF NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE COMPANY'S SOLE LIABILITY AND END-USER'S EXCLUSIVE REMEDY FOR FAILURE OF COMPANY TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE END-USER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE.**

**LIMITATION OF LIABILITY:** The remedies of the End-User set forth herein are exclusive and are the sole remedies for any failure of Company to comply with its obligations hereunder. In no event shall Company be liable in contract, in tort (including negligence or strict liability) or otherwise for damage to property or equipment other than the Products, including loss of profits or revenue, loss of use of Products, loss of data, cost of capital, claims of customers of the End-User or any special, indirect, incidental or consequential damages whatsoever. The total cumulative liability of Company hereunder whether the claims are based in contract (including indemnity), in tort (including negligence or strict liability) or otherwise, shall not exceed the price of the Product on which such liability is based.

Company shall not be responsible for failure to provide service or parts due to causes beyond Company's reasonable control.

**END-USER'S OBLIGATIONS:** In order to receive the benefits of this Warranty, the End-User must use the Product in a normal way; follow the Product's operation and maintenance manual; and protect against further damage to the Product if there is a covered defect.

**OTHER LIMITATIONS:** Company's obligations under this Warranty are expressly conditioned upon receipt by Company of all payments due to it (including interest charges, if any). During such time as Company has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Company shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

**COSTS NOT RELATED TO WARRANTY:** The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation, site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses or labor of Company representatives outside the terms of this Warranty will be borne by the End-User.

**OBTAINING WARRANTY SERVICE:** In the USA, call the Customer Reliability Center 7x24 at 800-356-5737. Outside of the USA, contact your local Powerware product sales or service representative, or call the Customer Reliability Center in the USA at 919-870-3149. Company will not accept any Product for return, credit or exchange unless expressly authorized by Company in writing and delivered FOB Company factory. For comments or questions about this Warranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.

## Load Protection Guarantee (US and Canada)

### Powerware UPS Models 3105, 3110, 3115, 5110, 5115, 5125, 9120, 9125, 9140, 9150, 9155, 9170+, and FERRUPS

**GUARANTOR:** The Guarantor for the load protection guaranty set forth herein is Eaton Electrical Inc., a Delaware Corporation company ("Company").

**LIMITED GUARANTY:** This load protection guaranty (this "Guaranty") applies only to the original End-User (the "End-User") of any Powerware 3105, 3110, 3115, 5110, 5115, 5125, 9120, 9125, 9140, 9150, 9155, 9170+, and FERRUPS Products (individually and collectively, the "Product") and cannot be transferred. This Guaranty applies even in the event that the Product is initially sold by Company for resale to an End-User.

**WHAT THIS GUARANTY COVERS:** For the lifetime of the Product, Guarantor promises to repair or replace, at Guarantor's option, the equipment (valued up to the limits shown below*) that is damaged by an AC power line surge, spike, or other transient when properly connected to Guarantor's uninterruptible power system ("UPS"). Reimbursement for or restoration of data loss excluded. This Guaranty applies only if all of the following circumstances arise:

1. The UPS is plugged into properly grounded and wired outlets, using no extension cords, adapters, other ground wires or other electrical connectors;
2. The installation of the UPS complies with all applicable electrical and safety codes described by the National Electric Code (NEC);
3. The UPS was used under normal operating conditions and in accordance with all labels and instructions; and
4. The UPS was not damaged by accident (other than AC power line transient), misuse, or abuse.

***Cumulative Limits to be paid by Guarantor under this Load Protection Guaranty:**

- $25,000 for Powerware UPS Models 3105, 3110, and 3115
- $150,000 for Powerware UPS Models 5110, 5115, and 5125
- $250,000 for Powerware UPS Models 9120, 9125, 9140, 9150, 9155, 9170+, and FERRUPS products

**WHAT THIS GUARANTY DOES NOT COVER:** Any reimbursement or repair to End-User's equipment does not include reimbursement for or restoration of any data loss. This Guaranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the charge of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, abuse, misuse, misapplication, or incorrect installation of Product; (d) repair or alteration of Product not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; (e) improper testing, operation, maintenance, adjustment, or modification of any kind to the Product not authorized in writing by Company personnel or performed by an authorized Company Customer Service Engineer or Agent; or (f) use of the Product under other than normal operating conditions or in a manner inconsistent with the Product's labels or instructions.

**This Guaranty is not valid: (a) unless the End-User returns to Company the Warranty Registration Card within thirty (30) days of purchase; or (b) if the Product's serial numbers have been removed or are illegible.**

Company shall not be responsible for any charges for testing, checking, removal or installation of any items.

**LIMITATION OF LIABILITY:** THE REMEDIES OF THE END-USER SET FORTH HEREIN ARE EXCLUSIVE AND ARE THE SOLE REMEDIES FOR ANY FAILURE OF COMPANY TO COMPLY WITH ITS OBLIGATIONS HEREUNDER. EXCEPT AS OTHERWISE PROVIDED FOR IN THIS GUARANTY, IN NO EVENT SHALL COMPANY BE LIABLE IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE FOR DAMAGE TO PROPERTY OR EQUIPMENT OTHER THAN THE PRODUCTS, INCLUDING LOSS OF PROFITS OR REVENUE, LOSS OF USE OF PRODUCTS, LOSS OF DATA, COST OF CAPITAL, CLAIMS OF CUSTOMERS OF THE END-USER OR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER. THE TOTAL CUMULATIVE LIABILITY OF COMPANY HEREUNDER WHETHER THE CLAIMS ARE BASED IN CONTRACT (INCLUDING INDEMNITY), IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE, SHALL NOT EXCEED THOSE SET FORTH ABOVE.

Company shall not be responsible for failure to provide repair or replacement under this Guaranty due to causes beyond Company's reasonable control.

**END-USER'S OBLIGATIONS:** In order to receive the benefits of this Guaranty, the End-User must use the Product in a normal way; follow the Product's operation and maintenance manual; and protect against further damage to the Product if there is a covered defect.

**OTHER LIMITATIONS:** Company's obligations under this Guaranty are expressly conditioned upon receipt by Company of all payments due to it (including interest charges, if any). During such time as Company has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Company shall have no obligation under this Guaranty.

**COSTS NOT RELATED TO GUARANTY:** The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Guaranty, including without limitation, site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses or labor of Company representatives outside the terms of this Guaranty will be borne by the End-User.

**TO MAKE A CLAIM:** In the USA, call the Customer Reliability Center 7x24 at 800-356-5737. Outside of the USA, contact your local Powerware product sales or service representative, or call the Customer Reliability Center in the USA at 919-870-3149. For comments or questions about this Load Protection Guaranty, write to the Customer Quality Representative, 3301 Spring Forest Road, Raleigh, North Carolina 27616 USA.

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